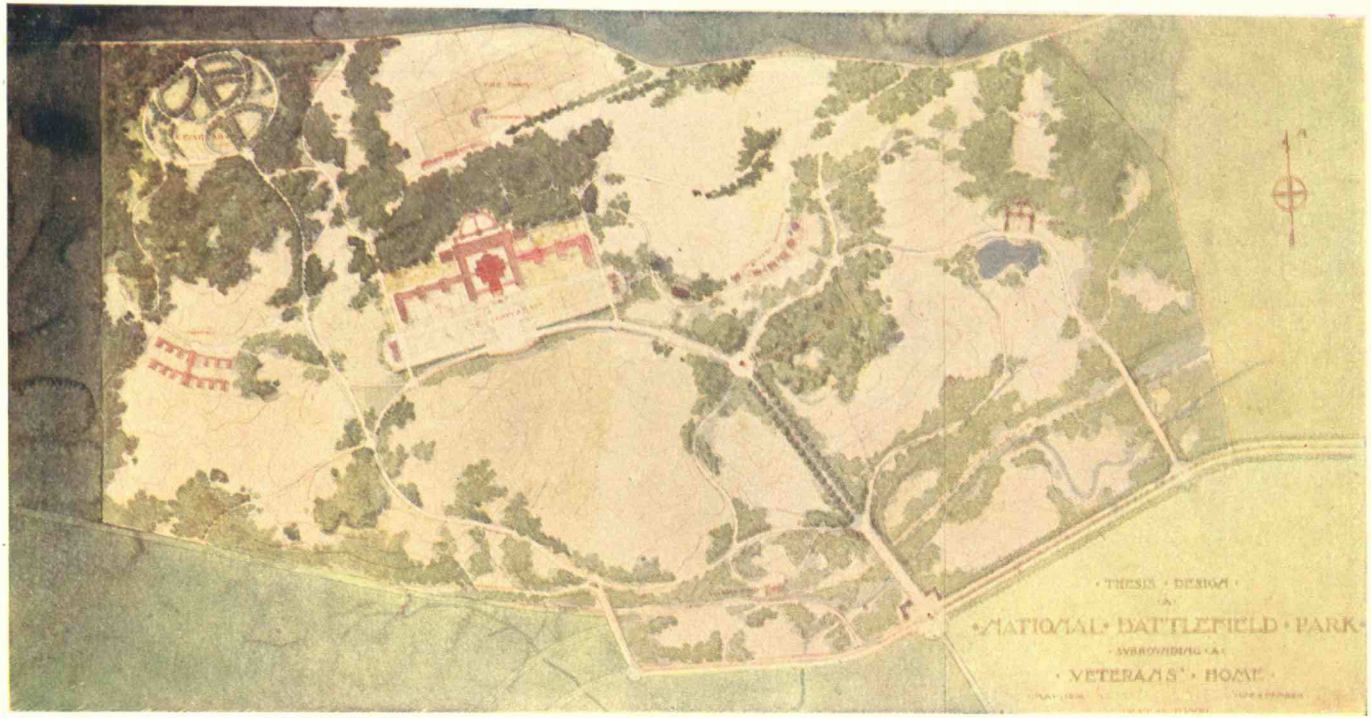

A NATIONAL BATTLEFIELD PARK. W. P. R. PEMBER.

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THE COURSE IN LANDSCAPE ARCHITECTURE

At the Commencement exercises of last year the first graduates of the Course in Landscape Architecture received their degrees. It is too early to judge of the actual success of the new course, whose first years have been necessarily somewhat experimental. But, with similar courses being started at other colleges, an explanation of the spirit of the instruction in the Institute course and a consideration of some of the students' work may be of interest.

With the satisfaction of our material wants comes the desire for the things which contribute to the well-being and pleasures of the mind. Our country is rapidly reaching the point where there is beginning to be felt this desire for the features of civilization which the history of other nations has shown to come with wealth and power. In the century just passed, Science exercised the greatest influence in our progress, with astonishing results. At the beginning of this new century, Commercialism is the spirit most in evidence, with results as astonishing and wonderful. In the next years to come the Fine Arts will, and should, as a natural sequence, exercise a greater influence than they have at any other period of our existence. And not only have Science and Commerce been the means of satisfying

our material needs, but they have in addition given us, in wealth, one of the essential means of supplying this newborn desire.

Even now there are tangible indications of a more universal appreciation of the value of the Fine Arts. One of these indications is the important consideration which the university — Columbia in particular — is giving to the question as to whether or not its curriculum and methods can serve for the proper training of the sculptor and painter. Universities have in the past offered courses in the Fine Arts, but to the end of a broadening culture rather than for the training of men who are able to create examples of fine art. This new movement concerns the Fine Arts from that particular and important standpoint. Architecture, from its very intimate relation to our every-day needs, has always received more attention than the other branches of art; but even that strong, inherent advantage has not enabled it, thus far, to rise above the stronger influences of Science and Commerce. And most of our architecture to-day is architecture in name only, its value measured in the prevailing commercial spirit of the times, and the architect's success rated by the quantity of work rather than by its quality. Painting, sculpture, and landscape architecture in this country have been, up to the present, the interest mainly of individuals who, from a natural inclination toward such things, have striven to keep them alive. But now the people as a whole are awakening to the interest and value of these precious gifts to civilization, and, judging from the results thus far, are awakening with the same sense of bewilderment as that of a person coming out of a deep sleep.

With its usual acumen in providing for the training of men who are to shape, and are shaping, the progress and welfare of this country, the Institute recognized the com-

ing demand for men trained in the profession of Landscape Architecture; and the new course is the result. Up to the present time there has been a demand for the services of such men; but this demand has in itself been of a doubtful and uncertain nature, and with no clear ideas of what landscape architecture really means. It has been supplied, with few exceptions, by men whose professions had some bearing on the work, as civil engineers, whose knowledge of certain of its practical branches stood them in good stead, but whose sense of beauty, proportion, and design, was expressed principally in mathematical curves and trigonometry. Or it has been supplied by horticulturists, whose familiarity with shrubs and plants — important materials of the landscape architect — gave them the necessary assurance to allow them to cut up beautiful lawns with pretty flower beds and specimens of unnatural, curious, and therefore to them very desirable, foreign plants.

The close relation between architecture and landscape architecture makes it very desirable that the school training for these professions should be as closely allied as their actual practice must be. No reasonable architect, however, would expect to become, or approach the requirements of, a landscape architect; and no reasonable landscape architect would presume to supplant the architect. The special training each must have beyond a general æsthetic training is too complex and too manifold to suppose that one man can conscientiously master them both. The architect, working in the materials and constructive methods of our country, seeks to provide shelter according to our needs and according to our climate and customs, and to give to the results the element of beauty, which has been the natural demand of human beings in all stages of civilization. The landscape architect, working with certain ele-

ments of nature in our country, seeks to make practical, and at the same time beautiful, the surroundings of our shelter, be it domestic, commercial, or civic. It is evident, then, that the professions are similar, inasmuch as they both have the task of providing beauty. They differ only in their practical details. To be able to produce this element of beauty means that these men should both be properly trained on the æsthetic side of their professions. Without this training the results are, in one case, mere examples of building or construction, and, in the other, examples of civil engineering and horticulture. The principles of composition, sense of proportion, sense of scale, etc., which are necessary to the architect in designing the façade of a building, are just as necessary to the landscape architect in designing a garden. And, again, the examples of true architecture of past civilization, which must serve for the school training of the architect, are much more plentiful and much better adapted for the teaching of these principles than are the examples of true landscape architecture of past civilization. It follows, therefore, that the association of the two professions in the preliminary training of school work is both natural and intelligent.

Since it is desirable that a course of landscape architecture should be associated with one in architecture, it is particularly fortunate that the latter course at the Institute is as strong as it is. It was the first of the architectural courses to be established, but its position as one of the leading schools is due to something more than seniority of age. Its present success has been due without question to an appreciation of the value of the spirit and methods of instruction of the École des Beaux-Arts at Paris, and to the efforts, especially of Professor Chandler, to encourage their adaptation in the course at the Institute. France as a

nation is the recognized leader in the appreciation and production of the Fine Arts. The Institute is fortunate, then, in having in charge of the course in design Professor Despradelle, a native of France, a graduate of its École des Beaux-Arts, and, what is most important of all, a born teacher, with an immense enthusiasm for architecture itself, and with the ability to transmit that enthusiasm to the student. He possesses, moreover, the highest ideals of his profession,— ideals which a school of architecture should hold and foster above everything else. In all the recent discussion as to whether the system of the university is adapted to the proper training of the sculptor, painter, and architect, one point has been brought out upon which there have been no differences of opinion: that the most essential factor in the teaching of the students in these branches is the individual instruction which can be had only by the close association of master and pupil. That this is very true is evident from experience in teaching design in the course in architecture, where this individual instruction is employed, and where the value of Professor Despradelle's influence is most felt.

Teaching the young men of this country by methods adapted from those of a race of very different temperament and attitude of mind has been criticised as fundamentally wrong. The sculptor, the painter, the architect, each is an artist. This one characteristic they have in common, and the lack of it reduces their professions to a commercial plane. This characteristic has no racial distinction, except, perhaps, one of degree; and, since it is a recognized fact that the artist is born and not made, and requires but to be awakened and developed, it would seem to be very advantageous to bring him in contact with the strongest artistic temperament available for his awakening and develop-

ment. Since the pre-eminence of this quality in the French school comes from the greater natural endowment of this quality in the French people as a nation, it would appear that the method of teaching architecture at the Institute in the spirit of the École des Beaux-Arts is entirely reasonable.

Criticism is heard, again, of the results of the teachings of the École, as shown by the work in this country of some of its recent graduates. Such criticism is superficial, failing to appreciate the spirit underlying such work, and mistaking for the true results of the French school that which time will soon show to have been but a passing fashion, or the results of an abundant enthusiasm not yet cooled by contact with our actual conditions and temperament.

That the Beaux-Arts method of instruction can prove its worth in something more tangible and real than is shown by school work has been most interestingly shown by the recent competition for the new Boston Athenæum.* A competition nowadays, as a rule, has but little value in determining real merit; but it is safe to say, considering the standing of the judges and the comparative obscurity of the successful competitors, that the results of this particular competition have some value. The architects ranking highest in the decision were all trained in the methods of the École des Beaux-Arts. The winner was a Tech man with Institute training amplified by further study at the École itself. The difference in the plans submitted by architects with and without this training was a silent but potent witness to the value of the methods of the École des Beaux-Arts in teaching architecture.

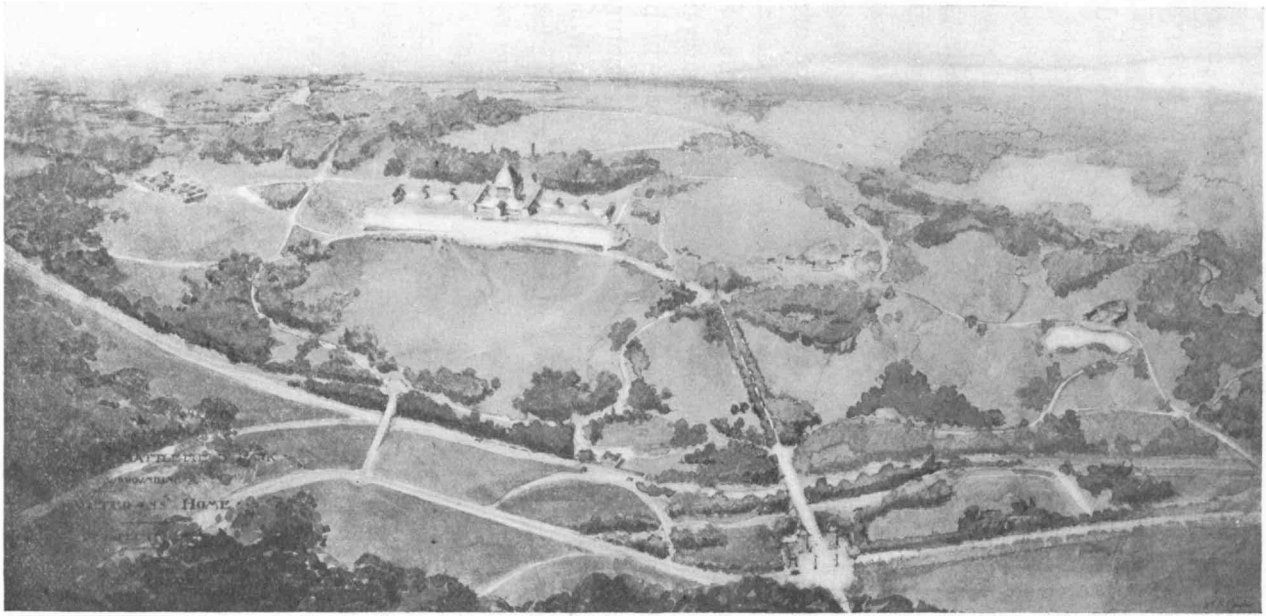
This article may seem to have given more consideration to the architectural course than to the course in landscape

* See Review, Vol. IV., p. 321.

architecture. But this was necessary, because the principles of architecture are so important a factor in the new course, and also because of the desire to show the value of its system of teaching design in developing the æsthetic side of the landscape architect. This development can be but started in the right direction during the school years, and can reach maturity only by further application and study in the years of practice. It is the keynote to the fullest realization of the profession, and must be encouraged above all things if landscape architecture is to take its proper place among the fine arts.

The following illustrations and the frontispiece are reproductions of some of the work done by the students in the course, accompanied with their own accounts of the working out of the problems. These written descriptions, which are required as a part of the work, and which are printed *in extenso* in order to give an idea of the nature of that work, give excellent training for the reports which a landscape architect is called upon to write in actual practice. These plans, from their nature, can show but little of the value of the æsthetic training; but there can be seen at least a logical and intelligent treatment of the practical considerations which form the basis of landscape architecture, as well as the basis of architecture.

H. W. GARDNER, '94.



Perspective View

A NATIONAL BATTLEFIELD

W. P. R. Pember

THESIS DESIGN FOR A NATIONAL BATTLE-FIELD PARK SURROUNDING A VETERANS' HOME

Programme.— On a large tract of land comprising a part of the site of one of the great battles of the Civil War, in Eastern Tennessee, there is to be created a national park. This park is to include a large home for veteran soldiers of the Civil, Spanish, and other wars, a national cemetery, and other necessary buildings and divisions. (1) The Veterans' Home, whose chief buildings have been designed by E. F. Lawrence, as a thesis in the Course in Architecture, is to accommodate 1,500 inmates, and is to include, in addition to the buildings provided for in Mr. Lawrence's main group, the following: —

(*a*) A hospital to accommodate 300 patients, with contagious wards.

(*b*) Private houses for the commandant of the home and for the following officers: surgeon, chief engineer, quartermaster.

(*c*) A farm, with gardens and a greenhouse.

(*d*) Power-house and coal-sheds.

(*e*) Laundry, stables, storehouses, etc.

In addition to these there are required in the park: —

(2) A national cemetery, with receiving tomb and chapel.

(3) A railroad station.

(4) A casino and band-stand for the use of the public who make use of the park.

The park is to be connected with the park system of Jackson City, Tenn., which is situated near by, and is to furnish convenient means of communication between the roads which bound it on the north and south. The available land is a piece of rolling, hilly country, lying on the lower slopes of a high range of hills, and bordering a small stream which flows through the valley below. The tract consists essentially of a spur of the hilly country which runs from the higher land in the north-west corner, entirely through the northern part of the land. To the north is an almost continuous slope to the stream below, broken, however, into three small

valleys by slight ridges. To the north, behind the ridge, is another smaller depression. The north-western part of the tract is heavily wooded, as is a large part of the northern slope of the ridge and a considerable part of the southern slope. Farther down the southern slope, as it comes down into the valley, the country is much more open. Here are farms and broad, gently sloping fields. Over these to the south, and especially to the south-east, are views across and down the valley for miles. At the foot of the southern slope, following the stream, is the main line of the Southern Railroad, while across the stream is the route proposed for the extension of the city parkway.

Description.— As may be seen by reference to the general plan (frontispiece), this design is an attempt to adapt a large group of buildings, arranged in a formal plan, to an actual piece of ground. It is also an attempt to harmonize the formal arrangement of that group with the natural treatment necessary in the laying out of an extensive park, which the group of buildings is to dominate. It has been attempted also to solve these problems in a practical way, and at the same time to express the fact that it is a park which is being laid out, not merely the grounds around the home.

The size and importance of the central group of the Veterans' Home seemed to make it necessary that it should occupy a prominent place in the grounds,— one in which it would be seen to the best advantage and get the best of the vistas, and yet one in which a certain amount of seclusion could be obtained for the inmates. It was necessary also that the means of access be direct and of easy grade. Accordingly, a situation has been selected on the top of the central ridge of the park, on one of its highest points. The group faces toward the main view as nearly as is allowed by the character of the buildings themselves and of the country. Their main view is across the valley, down the centre of the three valleys into which the face of the slope is divided. It is framed by the planting and the natural woods on the ridges which enclose this hollow. The esplanade before the group is built well out into this hollow and well above it, making its great wall a prominent feature from all that part below, and serving as a good

footing for the great dome of the memorial building. To keep the broad view from the esplanade as simple as possible, the approaches have been located on the sides. The most important of these leads from the main avenue, serving as the principal road both to the buildings and to the park.

It has been this question of approaches to buildings and park — of their relation to each other and to the main entrance — that has been the turning-point of the problem. The main entrance to the park from the city parkway was determined by the nature of the ground. It was necesary to keep the approach above the railroad, and a slight elevation on either side of the latter at this point made this possible. The point of entrance being fixed, there were three main requirements to be met in designing the approaches: —

(1) The necessity of a direct approach from the main entrance to the home.

(2) The necessity of keeping it out of the main vista from the esplanade.

(3) The necessity of retaining its office as an avenue of the park as well as an approach to the main buildings.

The first requirement has been met by making the approach a formal one, as straight and of as slight grade as might be and still satisfy the other two requirements.

The second requirement has been met by bringing the approach up on the ridge between two of the depressions into which the southern slope is divided. The approach has then been heavily planted as an avenue and with other informal planting. Thus not only is the road obscured from view, but also the planting acts as a frame for the main vista from the esplanade.

The third requirement is by far the most important of the three, as on its correct solution depends the entire character of the park. It seems that one is justified in saying that the success or failure of the design as a solution of the programme depends on this one point; namely, the proper relation of the approaches to the Home to the roads of the park. As approaches to the Home, it is necessary that the roads satisfy the first two requirements; as drives in the public park, they need not be very direct or of uniform grade, but they

must be so laid out as to take in as many points of interest, afford as many pleasing vistas, and give as many varying aspects of shaded drives, open stretches, etc., as is possible.

In this particular case it seemed necessary that the main drive from the entrance should not extend to the Home in an unbroken line. Accordingly, while preserving its formality, it has been interrupted by an open place, in the centre of which is a great monument to the soldiers who perished on this battlefield. From this formal place extend two roads of nearly equal importance. The one, considerably more direct, leads at once to the Home. The other, a little less direct, leads into the more public part of the park. Thus the effect to a person entering by the main entrance, and coming up the main boulevard, would be to present at the monument two alternative routes. To the left would now be plainly seen the building of the Home, while to the right would be an almost equally direct and attractive route leading through the woods to the more public part of the park, where are the casino, the lake, band-stand, winding paths and drives, lookouts, etc.

The question of the location and relation of entrance approaches and main group of buildings having been settled, the fulfilment of the other conditions of the programme followed quite readily. Separated from the division of the park commanded from the Home by the ridge which the main approach occupies, is the most easterly of the three divisions. This, because of its easy accessibility and proximity to the parkway, has been utilized as a more public part of the park. By damming a spring-fed brook in a depression in the centre of this division, a small lake has been created, which serves as the central part of this section. The drives from the entrance, from the monument, and from the eastern parkway entrance, join as they skirt this lake. On its shores, near the junction, is situated a public casino, just as would be found in a large park near the city. Its object would be somewhat similar to the refectory in Franklin Park, though different in arrangement. As the plan may faintly indicate, the group consists of an open square elevated slightly above the lake, laid out in grass, with flower-beds, walks, etc., with a band-stand in the centre. Colonnades and pavilions

surround this, affording pleasant lounging-places and include waiting-rooms, small booths, retiring-rooms, and an open-air restaurant. This group looks out directly over the lake, while above it rises a wooded hillside, on top of which is a lookout whence an excellent view may be gained over lake and park to the main entrance and beyond up the valley. This lookout is reached by a circuit drive, which winds in and out around shoulders of the hill, through woods and across open glades, affording glimpses here and there of views on either side, and ending in one of the more important roads of the park.

Between these two divisions of the park, and starting from the monument, well hidden by planting, a road connects the streets in front of and behind the park, without sensibly intruding itself on any vista.

The third and most westerly of the divisions of the park is essentially a private and quiet one. The continuation of the main approach to the Home, after leaving the esplanade, sweeps around on the ridge, separating the two divisions, and, joining the main road from the cemetery, turns again toward the main entrance after touching the public road at a third entrance. The original road crossed the railroad at the same point that the main avenue does, and followed for some distance the course of this park road. It has been deflected, and crosses the railroad by a second bridge and touches the park again at this third entrance. By this means the traffic of a main county road is kept out of the park entirely, and kept almost entirely out of view from the esplanade.

In the third division of the park, well to the southern part, is situated the hospital. It is located on an open, airy spot, and has been designed to consist of low semi-detached wards, open as much as possible to light and air. They are as accessible as possible to the Home; and near by, separated by a low ridge, are contagious wards for thirty patients. Higher up on the slope of the main mountain is the cemetery. This is planned as a secluded, quiet place, separated entirely from the park traffic, from hospital, and from the Home; and yet it is directly accessible from the entrance and to the public. Although the Home, hospital, and cemetery seem

close together on plan, the rolling nature of the ground and the thick woods around the cemetery almost entirely separate them from each other. As regards the service of the Home and park, the power-house, coal-sheds, stables, and storehouses have been grouped in the valley behind the ridge on which the Home is situated. Though close to the buildings, they are screened by the thick woods, which cut them off from the gardens and quiet walks provided behind the Home, for the veterans. These can be reached from the main road without being much seen, although most of the service would come from the back road, or up the spur track of the railroad, which could connect lower down with the main railroad.

On the slope behind these buildings and below the woods, shielding the cemetery, is the farm, including fields for the supplying of produce for the Home, and a greenhouse for flowers and forcing purposes.

The quarters for the officers of the Home — the commandant, the engineers, the surgeons, the quartermaster etc.— have been arranged to give them especial privacy from the public, as well as easy access to the Home. So an "officers' road" has been laid out, separate from the main roads and looking out over the woods, down the public part of the park. The importance of the commandant's house has been emphasized by its size and by giving it a separate and formal entrance from the main approach.

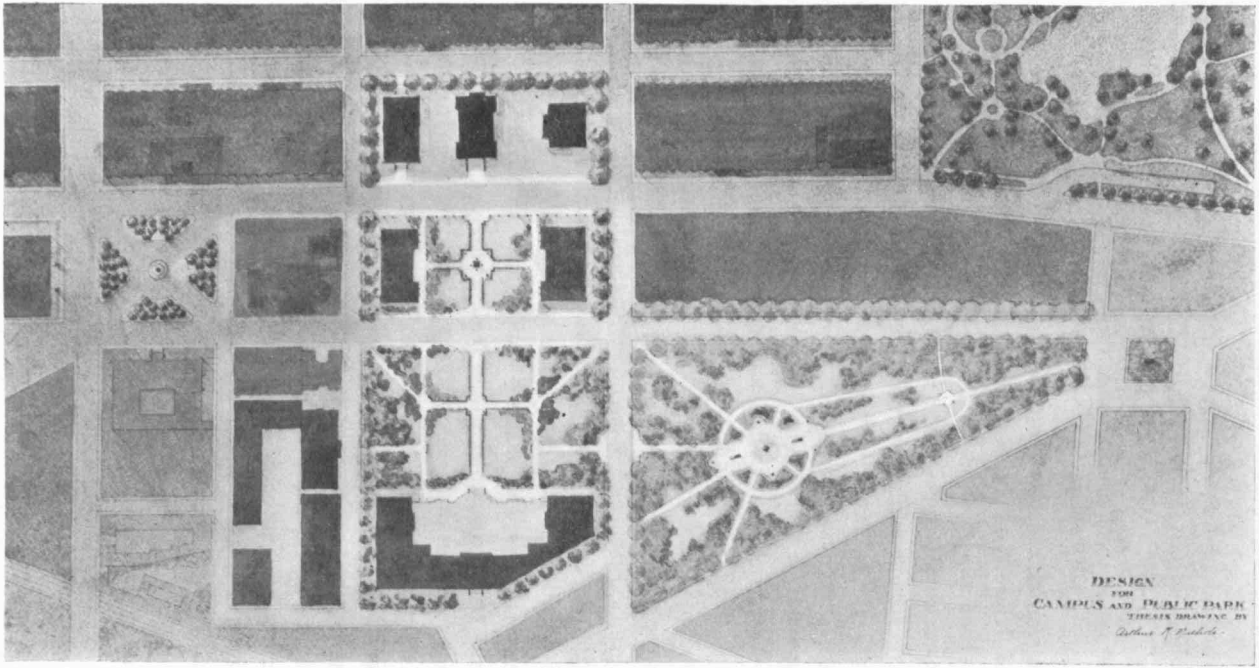
The railroad station, which is a rather important one, has called for considerable attention. It is a junction station, and has to serve a considerable resident population in addition to being the main station of the Home. This will explain the number and direction of the roads around it.

In conclusion, in designing the park in accordance with the considerations which I have set forth, I have attempted to make the design as practical as possible, and capable of being constructed without enormous outlay. The Veterans' Home, of course, is not to be included in this classification, as it is an exercise in composition, not in economy. With the park I have not hesitated to do what seemed best, I have also sought to adapt what I have done to existing conditions. W. P. R. PEMBER, '02.

THESIS DESIGN FOR THE EXTENSION OF THE PARK SYSTEM IN BACK BAY, INCLUDING A CAMPUS FOR THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Programme.— The removal of tracks on land recently occupied by the New York, New Haven & Hartford Railroad has left a large space which could be put to no better use than the extension of the present park system. With this land available it naturally suggests a campus for the Institute, especially because of its proximity to the present Institute property. That such an addition would be better than the purchase of land in some of the suburbs is not certain; but the design presents a solution which could easily be carried out if such an addition should be made. For a campus the land bounded by Boylston, Berkeley, Stanhope, and Clarendon Streets, has been taken. A campus thus situated would unite the present Institute property on Boylston Street with that on Trinity Place and Clarendon Street, thus giving the Institute a large area, with a prominence and individuality which it will not possess until some large scheme is carried out.

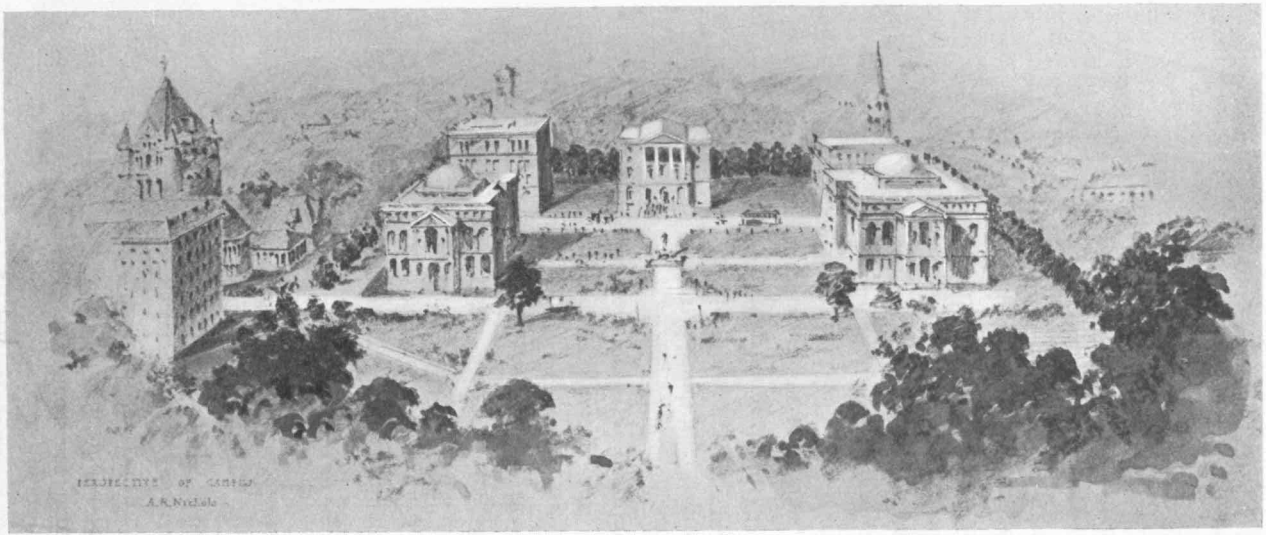
Description.— The Rogers Building is so situated as easily to become the focal point of this enlarged area. Consequently, the campus has been designed with the Rogers Building as the central point of interest. The main axis is taken from the centre of Rogers Building, and runs parallel to Berkeley and Clarendon Streets. This main axis is terminated at the Stanhope Street end by a large dormitory facing Rogers and extending nearly the full width of land between Berkeley and Clarendon Streets. This dormitory with its imposing façade is intended to wall in the campus at that end, and shut out the Pope and Youth's Companion Buildings as much as possible. From the Rogers Building and Boylston Street the view extends over the campus, and is terminated by the dormitory which serves as a background for the campus. The dormitory has two wings extending toward St. James Avenue, thus forming with the main part of the dormitory a partly enclosed area, which has been treated as a terrace. This



PLAN

A CAMPUS FOR THE INSTITUTE

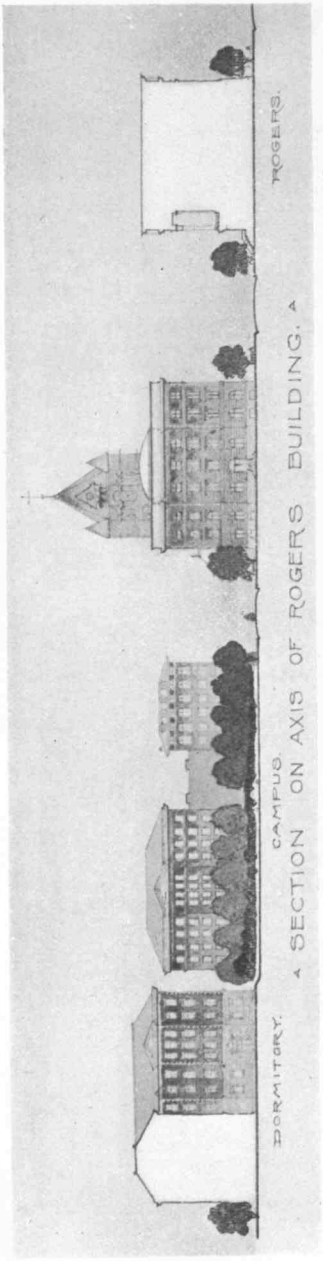
A. R. NICHOLS



PERSPECTIVE VIEW

A CAMPUS FOR THE INSTITUTE

A. R. NICHOLS



terrace is necessary because of the elevation of Stanhope Street above the general level of the campus. This terrace itself is extremely large, and might well be considered the yard of the dormitory. It is bordered by a balustrade, and joins the lower campus by broad steps in the centre, leading to the main part of the campus, and by minor ones at the two sides.

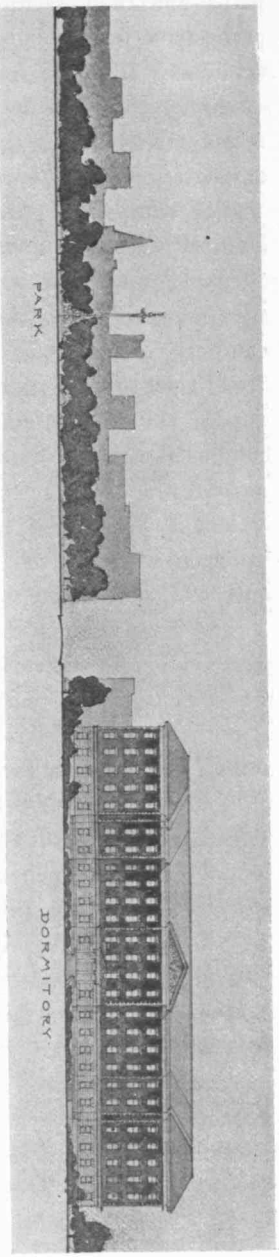
At the ends of the block between Boylston Street and St. James Avenue two laboratory buildings have been placed. These buildings, devoted to Physics and Chemistry, face each other, and frame in a vista from Rogers Building and Boylston Street through the campus to the dormitory. From the dormitory, on the other hand, they limit the interest mainly to the campus, and focalize it especially upon the Rogers Building. This is well shown in the perspective drawing of the campus.

In addition to the buildings already mentioned, with Rogers and Walker, there are the buildings on the land between Clarendon Street and Trinity Place to be considered. Besides the Engineering and Pierce Buildings there is the Walker Memorial Gymnasium, Electrical Building, and a Recitation Hall. There is an open space between these buildings and an

open court in the centre, so that plenty of light is afforded. The Electrical Building faces Clarendon Street, and occupies the same length of frontage as the dormitory. The large Recitation Hall, with its many lecture halls and recitation-rooms, is between the Electrical Building and the Hotel Ludlow. This building faces directly on the campus, and shuts out the rear of the Pierce and Engineering Buildings.

With all the buildings located, the next consideration must be the general lay-out of the campus itself, first with reference to the paths and then with reference to the planting.

The main path of the campus is that on the axis, and connects the terrace and dormitory directly with Rogers. At the point where it crosses the path connecting the Physics and Chemistry Buildings there is a monument intended to commemorate the founding of the Institute. The crossing of these two important paths is further emphasized by being made into a small square with architectural features at the corners, and surrounded by a low hedge. There are also two paths from the terrace running parallel to the main central path. From these there are paths connecting the corners on St. James Avenue, besides the path to the Recitation Hall, and the one extending to the park, where it is continued directly to the monumental fountain. The plan will best show these main



paths and their relation to the minor ones. In all cases the paths have been placed so as best to meet the need of direct traffic as well as to form a systematic scheme in the arrangement of the whole. On Boylston Street there is a monumental entrance to the main part of the campus, thus adding attractiveness to and emphasizing the main axis.

The campus is surrounded on all sides by planting, in order to confine it as much as possible and to give it the individuality desired. Planting for individual specimens is not desired in such a situation, and hence has not been employed in any part of the campus. The planting has been especially massed on the Berkeley Street side, so as to merge with that on the park and form a unification of the two designs. Before leaving the consideration of the campus design, it should be noted that the main aim has been to separate the campus from all the surrounding city, giving it an individuality of its own, but merging into the adjoining park. This has been accomplished primarily by the arrangement of the buildings, and, secondarily, by the massing of the trees and shrubs.

The park joining the campus is decidedly architectural in its treatment. As shown in plan, the main feature is the central fountain with its formal surroundings. Owing to the triangular shape of the park, the axis is necessarily at an angle with the secondary axis of the campus extending into the park. The axes meet at the fountain, and there establish a focal point from which all other paths radiate. About the fountain the axis of the park is accented by an elongated open space with its many statues and sculptural adornments. About this open space are formal beds intended for the use of perennials in summer and evergreens in winter. The beds are bounded on the outer side by a circular path centring on the fountain. From this circular path two minor paths, besides the main path on the axis, lead toward Park Square. The planting, in contrast to the general lay-out of the paths, is very informal in its character. It has been thickly grouped at the Park Square end to hide the accumulated traffic present there. Similarly, Columbus Avenue is hidden to a certain extent. As has been noted, the planting near Berkeley Street has been massed collectively with

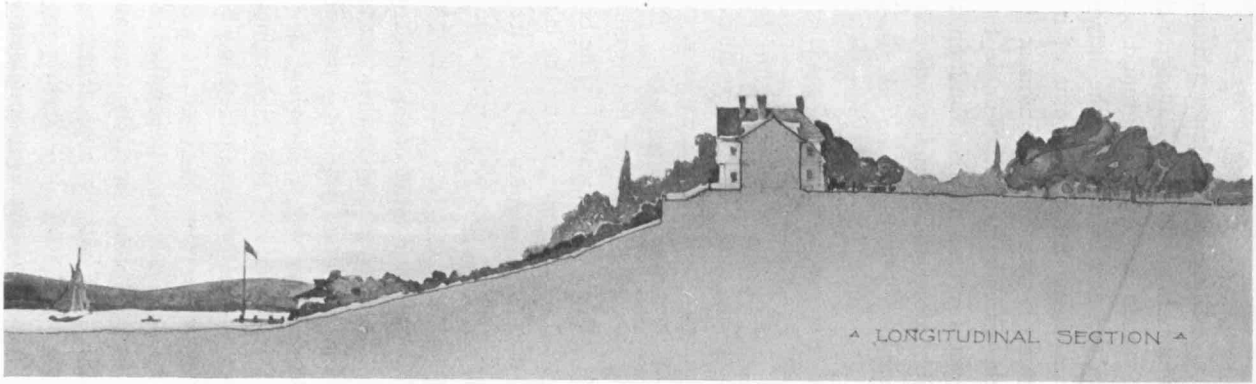
that on the campus. Through this latter planting a vista is obtained from the campus along the path leading to the park and terminating in the fountain and its background. It is along this line that the second section is taken in the drawing showing sections. The fountain, being the main point of interest, has been taken as a tall monument with four fountains at the base. These fountains project the water upward at an angle to the monument. As nearly all the paths centre on this fountain, the planting has been arranged largely along them, and grouped so as to form as broad vistas as possible. A. R. NICHOLS, '02.

A COUNTRY ESTATE.

Programme.—A gentleman owning a tract of land in the country wishes to have it laid out for a country home. The tract of land is 500 feet in width and 1,000 feet long, extending from a country road at the back down to a large lake. The land is practically level from the road to a point 300 feet from the lake, whence there is a descent of 90 feet to the water. The best view over the lake is supposed to be to the right, facing the lake. The lay-out should include house, stables, approaches, service, garden, and a treatment of the lake front. Any architectural accessories needed may be used. GUY LOWELL.

Description.—The slope and relief of the lot determined at once the location of the house; namely, upon the crest of the bank sloping to the lake. The condition regarding the view required the house to be so placed as to insure the view, as well as possible, from being cut off by the owner of the neighboring property. The house has been located, therefore, on the left-hand side of the lot, facing the lake and on the crest of the bank.

The location of the house being determined, the problem was resolved into two smaller ones: first, the treatment of the level plateau on the highway side with its approaches, court, and stable; second, the treatment of the steep slope leading from the house to the water front. These two important problems were very different in requirements, and each demanded a separate line of treatment to solve it.



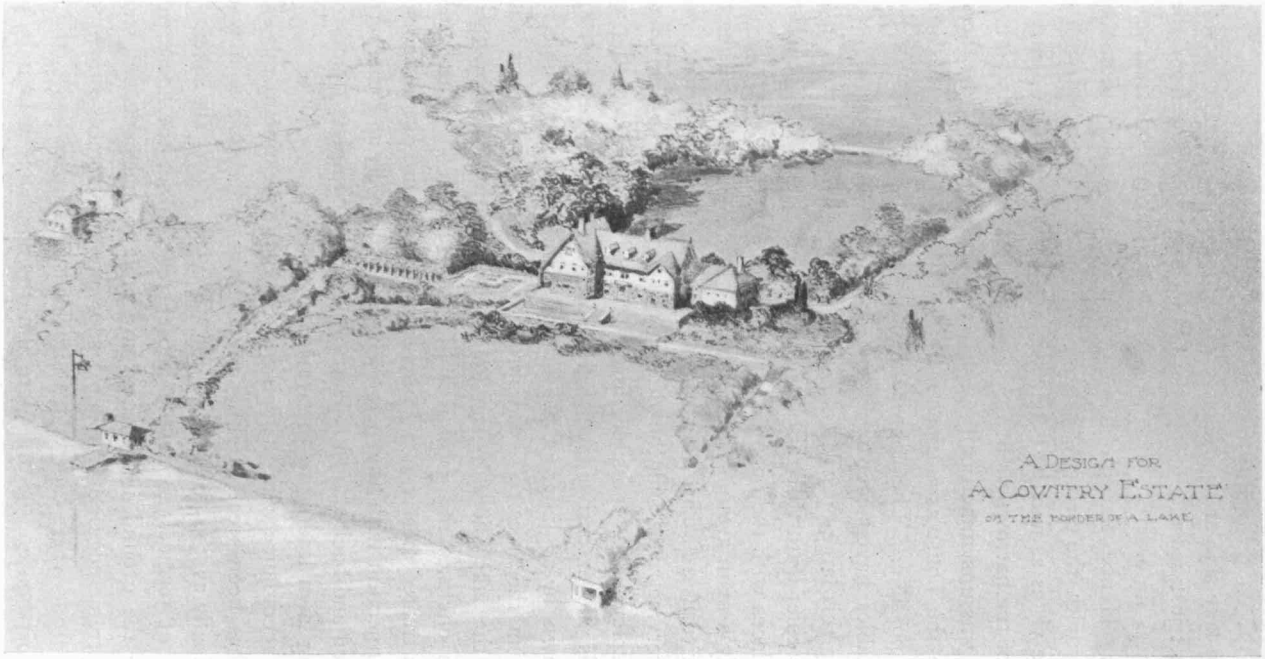
SECTION

A COUNTRY ESTATE

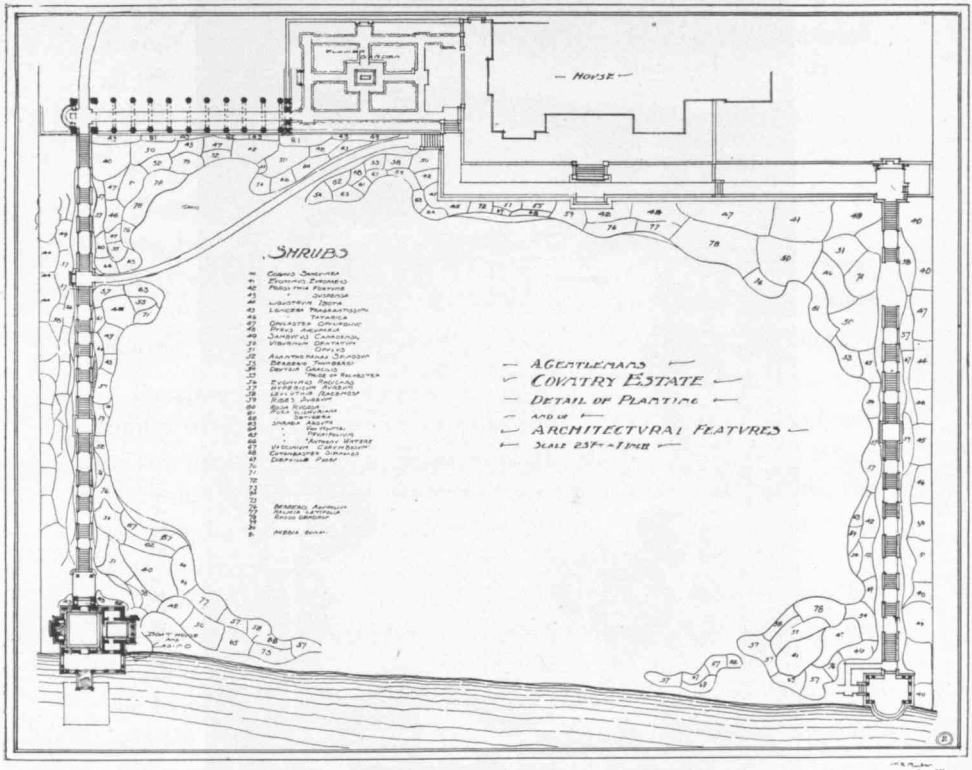
W. P. R. PEMBER

The lake side of the house opens immediately on the view; and this fact justified me in shutting off entirely this view from the approaches, in order to intensify the effect when one reaches the house. Hence the problem of the approach side is concerned merely with the elements existing on the lot, combined with such chance vistas as may be obtained across the adjoining property. In view of the narrowness of the lot (500 feet) and the fact that the house was unsymmetrically placed, it seemed best to treat the space before the house as an open lawn, in order to secure the broadest effect possible. The approaches, the service and stable roads, and the stables have accordingly been concealed as much as possible, leaving this large open lawn, bounded irregularly by groups of trees, as the chief feature of this side of the house and joining it in one or two places with the open land of the adjacent property. There is frankly a main avenue which leads to the forecourt, and there the visitor turns and drives out by the same road by which he entered. The service roads and the drive to the stables have been made as inconspicuous as possible, and screened by the planting which bounds the extensive lawn. Interest is given to the other end of the lawn by a glimpse there of the main road, just visible in the break in the trees. This approach side of the estate is shut off from the lake shore by the house, by planting, and by the wall which encloses the garden on its landward side. The garden itself is treated merely as an extension of the house out of doors, and, in connection with the pergola leading from it, and the terraces, relieved and backed up by planting, forms a complete frame for the sloping lawn leading to the water.

In accordance with the spirit of the entire treatment, this sloping part has been treated with simplicity, in order that it may serve principally as the foreground for the view across the lake. Two levels of terraces about the house serve to set the house well up above the ground, while the two simple formal paths and steps on the extreme edges of the lot lead from the terraces down to the water front where they end, the one in a summer-house, the other in a boat-house. All these are almost completely hidden by planting, giving only glimpses of themselves here and there, while all



PERSPECTIVE VIEW — A COUNTRY ESTATE — W. P. R. PEMBER

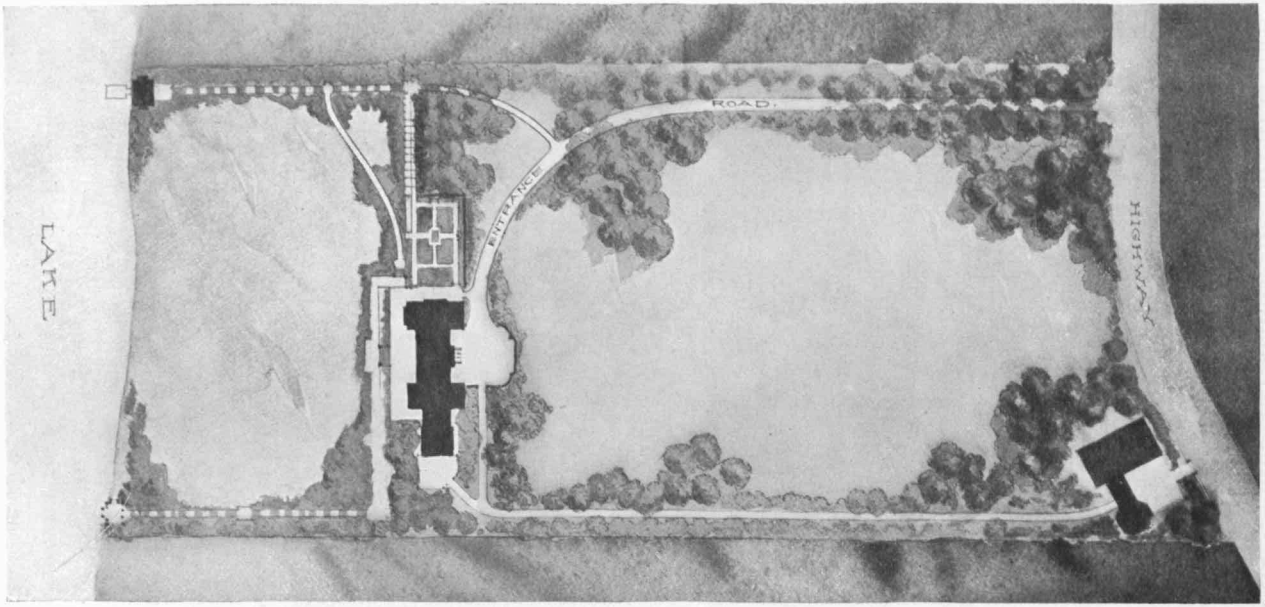


PLANTING PLAN A COUNTRY ESTATE W. P. R. PEMBER

the centre of the slope down to the water's edge is greensward uncut by any path. Minor paths complete this part of the lay-out but do not interfere with the general scheme, as they also are almost completely hidden by planting.

The garden has two functions, one as a portion of the frame for this part of the grounds, the other as an outdoor extension of the house. It has a high garden wall on the highway side, seats, a fountain, and statues, and extends to a pergola leading to the edge of the lot. It is backed up by high planting, which gives shelter and privacy from visitors, but at the same time helps in the enjoyment of the view.

The scheme of the design, which is a typical rather than a



PLAN A COUNTRY ESTATE W. P. R. PEMBER

special one, is on the simplest of lines, with the attempt to solve directly and practically each condition that arises and to harmonize all the conditions. W. P. R. PEMBER, '02.

A COUNTRY ESTATE.

Programme.— The accompanying contour survey shows a lot at Long Island, bounded by a highway, adjoining estates, and a brook. The student is to place the house with regard to attractive views, and arrange the planting to screen the stable and neighboring house. GUY LOWELL.

Description.— In the solution of the given problem there are five things of primary importance to be considered; namely, the choice of site for the house, the location of the stables, gardener's cottage and other buildings, the plotting of approach and service roads, the planning of possible vistas, and the planting and massing of trees and shrubs.

The first consideration should be given to the choice of site for the house. As the highroad runs along the north, that front of the house is naturally the approach side, while the south side becomes the living portion. Two solutions of this part of the problem are possible: the one, to place the house upon the southern slope of the central hill, in which case the crest of the hill may be utilized to shelter the house on its northern exposure and to screen the building across the highroad; and the other, to place the house upon the hilltop and rely upon a screen of planting to conceal the neighboring house and to afford shelter. The three following considerations give ample reasons for having adopted the second scheme: first, to keep the river and valley vista on the south as broad and extended as possible; second, to reduce to a minimum the comparatively uninteresting portion on the north which must be used for approach roads; and, third, not unduly to increase the amount of roadway that must be constructed to reach the house from the highroad.

Next should be considered the location of the formal garden, the service wing of the house, the stables, and the gardener's cottage.

A COUNTRY ESTATE — Miss E. D. Stoddard

In regard to the location of the formal garden, the only advantage in placing it upon the west of the house rather than the east is that one may then have sunset views in the garden. On the other hand, if the garden is placed on the west, the service wing must be placed at the north-east corner of the house. But this corner of the estate seems to be the natural place for the stables and gardener's cottage, where they may be out of the way and

have easy access to the highroad. Therefore, the better solution has been to put the garden upon the east, taking advantage of the vista down over the eastern hill slope to the river, and to put the service wing on the north-west of the house, so that one road may be utilized for the service road and for connection between stables and house. The terrace on the south of the house has been carried around to the west, and a vista planned from there toward the west, to compensate for the loss of sunset views in the formal garden.

With the house and other buildings located, the approach and service roads must be laid out; and here it is simply a question of plotting a road which shall, in easy curves, rise the difference in level of thirty or thirty-five feet between the highroad and house. The grade is not at any point much over 5 per cent., and the required amount of grading has been kept down within reasonable limits. To follow the crest of the ridge, as indicated on the plan, gives views of the river on the east and of the grassed valley on the west; and this seems the most pleasing solution of this part of the problem. The width of the avenue need not be over fourteen or sixteen feet. From the turning loop before the house, a service road has been laid out, connecting with the kitchen yard and leading to the stables, the gardener's cottage, and to the highroad again. This service road is of less width and has a less conspicuous entrance than the approach avenue, in order that the two shall not be mistaken the one for the other.

In connection with the choice of site for the house, possible vistas have been marked out. The principal one extends from the southern terrace across the broad, open valley to the river beyond. The vista of second importance looks from the formal garden on the east down to the river; while looking from the western terrace is a third, planned to compensate for the lack of sunset views in the normal garden. There are minor vistas across the grounds, as, for example, the one from the path on the east looking across the river and up the hill to the pergola that ends the formal garden.

The aims, beside those for which planting is always done, influenced the placing of the groups of planting indicated. These

aims were to hide objectionable structures, as the stables and the neighboring house, to mark out or frame in vistas, to conceal the paths where they obstruct vistas by not being hidden by the natural contour of the ground, and finally to shut in the boundaries of the estate, so that any building erected in the future on adjacent property shall not mar the work already accomplished upon this estate.

E. D. Stoddard, '03.

ELECTRICAL ENGINEERING

At the beginning of the present academic year the Department of Electrical Engineering was separated from the Department of Physics and moved into the Augustus Lowell Laboratory of Electrical Engineering. This building was planned to give all necessary facilities for electrical engineering instruction and to provide some extra class-rooms for modern languages and mathematics. It is a single story structure, built on a factory basis and lighted by skylights instead of windows. It covers something over 40,000 square feet of ground, and is admirably adapted for engineering instruction. There is a boiler-room in the building, with space for 750 horse-power of boilers, of which 500 are being erected at present, a power plant and testing floor occupying a space about 40 feet wide by 300 feet long, a number of rooms for special research, photometer rooms, electrical testing laboratory, etc.

A large amount of apparatus for the Electrical Laboratory has been ordered; but a good deal of it will not be delivered until late in the spring, and will not be available for this year's instruction. The new equipment includes in part: one 480 kw., double current dynamo driven by a Russell engine; one 150 kw., three-phase dynamo driven by a Ridgeway engine; two 75 kw., direct current dynamos driven by Westinghouse engines; two 25 kw., direct current machines driven by a 100 horse-power Westinghouse engine. These machines constitute the generating plant of the laboratory.

In order to get a variety of currents, there are a number of motor-driven dynamos, the motors being operated by current from the power plant. For instance, a 150 kw. motor is directly connected to a 100 kw., 60 cycle dynamo and a 50 kw., 25 cycle dynamo, all of these machines being on the same bed-plate. Again, a 100 kw., 500 volt dynamo is driven by a 100 kw., direct current motor. There will be a storage battery with a capacity of about 560 ampere hours at 230 volts.

Besides the larger machines there are a number of direct current motors and dynamos, induction motors, alternating dynamos, synchronous motors, and transformers of all kinds. The capacity of the smaller machines varies from 30 kw. down to a fraction of a kw.

Besides the apparatus mentioned the department has a full equipment of instruments for the testing laboratory, a number of which have been purchased this year. We have also provided a general equipment of measuring instruments, both of commercial type, and instruments for the most delicate laboratory tests.

We hope that the facilities offered will induce men who wish to carry on researches to come to the Institute; and we shall be able to offer them not only a supply of electrical energy in any quantity and form, but instruments capable of making the most accurate measurements that may be required.

Naturally, the separation of Electrical Engineering from the Department of Physics has necessitated a number of changes in the course to be given. Although this course has not been settled, and the details are still under discussion, yet it can be said generally that the tendency will be in the direction of a more thorough training in Theoretical Electricity, and the shifting of the preliminary instruction and laboratory work out of the fourth year back into the second and third years, thus leaving more time for technical instruction and laboratory work, and for the preparation of the Thesis in the last year of the course. A certain amount of railroad location and construction is to be taught by the Civil Engineering Department, and the course in Hydraulics is to be considerably extended. These changes have been made at the expense of a part of the time that had previously been given in the Mechanical Engineering Department; but, taking as a basis the time allowed, that department has laid out a course which should give excellent results.

While the delay in the delivery of the apparatus makes the new laboratory look unfinished, yet it is admirably adapted to the work; and, when the equipment arrives, it

will be equal, if not superior, to any electrical engineering laboratory in the world. As compared with the facilities for laboratory work last year, we have at present much more room; and an amount of smaller apparatus has been delivered, which increases the facilities for instruction.

LOUIS DUNCAN.

GRADUATE SCHOOL OF ENGINEERING RESEARCH

In the charter granted to the incorporators of the Institute of Technology forty-one years ago, they and their successors were made a body corporate for the purpose of instituting a society of arts, a museum of arts, and a school of industrial science. In addition, the purpose and aim of the Corporation was then declared to be to aid "generally by suitable means the advancement, development, and practical application of science in connection with arts, agriculture, manufacture, and commerce."

This intention to advance and to develop the practical applications of science has been steadily kept in view; and the Corporation and Faculty of the Institute have striven constantly, in the four decades of its history, to advance the quality of instruction and to enlarge the facilities for laboratory practice. The curriculum of studies offered to undergraduate students of the Institute has gradually changed with the growing demands of the industrial life of the country. New engineering courses have differentiated themselves from those originally established. At its foundation the Institute offered but three distinct courses for engineers,— civil, mechanical, and mining engineering. To-day it offers, in addition to these, courses in electrical engineering, chemical engineering, sanitary engineering, and naval architecture; and in several of these branches applications of science are employed which forty years ago were unknown. Thus biology brings to the aid of the sanitary engineer

to-day a technical knowledge, absolutely essential in his profession, which was impossible forty years ago.

The demands of modern civilization call for engineers who can do more than keep abreast of the theory and practice of their profession. They must be able to solve new problems and to advance the state of the art in which their work lies. In applied science, no less than in pure science, there is need for research and for the development of the research spirit. Problems of immense practical importance are pressing for immediate solution. Such questions as the cheapening of electric power, the problem of long-distance transmission, the purification of streams, and the sanitary engineering of great cities, the numerous applications of chemical engineering to the arts, furnish numerous problems of investigation whose solution affords at once the keenest intellectual exercise and the most practical and useful results. The larger industrial and manufacturing establishments are themselves conducting independent laboratories of research; and there is an increasing demand for men who have not only the training of the technical school, but the attitude of mind to attack new problems,— men who have not simply a basis of theoretical and practical knowledge to begin research, but who have the spirit of research as well.

This demand for research in engineering and for men capable of undertaking such work has long been recognized, and the Institute has for some years looked toward the inauguration of a department of engineering research. The installation this year of the Lowell Electrical Engineering laboratories, with the additional facilities which are thus offered, makes the present an opportune time to undertake this work. A Graduate School of Engineering Research will therefore be established as a distinct department of the Institute immediately after the opening of the next academic year; namely, on Oct. 7, 1903. It is the intention of the authorities of the Massachusetts Institute of Technology to provide in this school facilities for a small number of advanced students who show capacity for research.

The administration of the school is vested by the Corporation and Faculty in a council consisting of members of the Faculty, in-

cluding the president as chairman. The staff will consist of professors and instructors of the Institute and other persons actually engaged in engineering enterprises.

Opportunities for advanced study and research will be provided in the following branches of engineering : —

Civil Engineering; Sanitary Engineering; Mechanical Engineering; Electrical Engineering; Naval Architecture and Marine Engineering; Mining Engineering and Metallurgy; and Chemical Engineering and Industrial Chemistry.

In these branches the degree of Doctor of Engineering (Eng. D.) will be awarded. As heretofore, the Institute will offer courses of advanced study and research in pure science,— in Mathematics, Mechanics, Physics, Chemistry, Biology, and Geology,— leading to the degree of Doctor of Philosophy (Ph.D.). These advanced courses will be open also to students of engineering research.

So far as facilities and means allow, it will be the aim of the Faculty to direct the work of those who enter the Graduate School toward the solution of problems of practical importance. It is hoped that persons who are interested in particular investigations may here find opportunities to advance the solution of such questions by the contribution of research funds for special investigations for a limited number of years. It may be mentioned in this connection that a friend of the Institute has generously offered to furnish $5,000 a year for a period of three years to be expended in the study of efficient and economical methods for dealing with the sewage of large cities, and that other donations for the investigation of industrial problems are contemplated.

There will be formed in each department of the Graduate School of Engineering Research a Seminar, including in its membership the professors, instructors, and graduate students concerned in the work of that department. Every member of the Graduate School will be expected to connect himself with a Seminar, and to take part in the presentation of papers, reports of recent advances in science, the examination of original sources of scientific or technical literature, and in such other work of the Seminar as may be assigned to him by the officer in charge.

Four fellowships of $500 each from the Edward Austin foundation will be available, from the beginning of the year 1903–04, for candidates for the Doctor's Degree, and will be awarded by the Corporation on recommendation of the Council. Holders of these fellowships will be exempt from tuition fees. After 1903–04 preference will be given to candidates who have been one year or more in residence.

Candidates for admission to the Graduate School of Engineering Research will in general be expected to have such training as is represented by the degree of Bachelor of Science of the Massachusetts Institute of Technology or of other institutions of corresponding grade. Greater importance will be attached, however, to personal fitness for the work desired than to the particular degree of the candidate or to the institution from which he comes; and the Faculty reserves the right to accept or reject, as it may deem wise, candidates of any academic rank. No one will be registered as a member of the Graduate School of Research who is not able to satisfy the Faculty that he has the necessary preparation and ability to enable him to pursue its work with advantage and promise of success. Persons of distinguished ability not holding any academic degree may, in special cases, be admitted to the school, and may be allowed to carry on researches; but such persons shall not be considered as candidates for the Doctor's Degree.

The degree of Doctor of Engineering (Eng. D.) will be conferred upon members of the school who have fulfilled the following requirements: —

At least two years before the degree shall be awarded, application for registration as a candidate for the degree of Doctor of Engineering must have been made. In making this application, the candidate will be expected to submit the course of study which he desires to pursue, and to announce his choice of a problem upon which he intends to make an extended original investigation or research and prepare a dissertation. To these subjects, and especially to his problem, he will be expected to devote himself diligently and successfully throughout a period of not less than two consecutive years, during which time he shall work in residence under the direct supervision of a Committee of the Faculty.

At least one month before taking any examinations for the degree of Doctor of Engineering every candidate shall deposit with the Council a printed or typewritten dissertation containing a description of the methods and the results of his research. No dissertation will be regarded as acceptable unless the work which it records shall represent a satisfactory contribution to the solution of the problem with which the candidate undertook to deal. To the dissertation shall be appended a brief biography of the author, containing a statement of his education and his previous work.

Upon notification that his dissertation is approved and that all other conditions have been fulfilled, a candidate may request examinations for the recommendation for the Doctor's Degree. Such examinations will be in part oral, and will be conducted by the Faculty of the Institute. The candidate, if successful, shall then present himself to receive the degree at such time as the Faculty may direct; but, before receiving his diploma, he must deposit with the Council fifty printed copies of his dissertation.

The preceding statements will suffice to make clear the advanced character and the high grade of the work to be pursued in the graduate school. The Institute is indeed to be congratulated on the extension of its work in this most important direction.

EDITORIALS

A Harvard Commencement programme of the year 1801, miraculously preserved into this twentieth century, shows a list of parts of such length and aridity as only a Puritan generation, inured to three-hour sermons, could tolerate. Among eight other numbers are a "Latin Salutatory"; a "Hebrew Oration"; a Greek dialogue upon "The Importance of a Knowledge of the Greek Language to the Defence of the Christian Revelation"; an English oration, by Benjamin Peirce, upon "Public Spirit"; and a "Forensic Disputation upon this Question: 'Whether Science be in a State of Progression?'"

One hundred years later there were but four Commencement parts. The topics, however, had not greatly changed. A Latin Salutatory was again delivered (and doubtless the same orotund phrases are in both); there was an English dissertation upon "Biology in Modern Poetry" (science, it would seem, *had* progressed); and there followed two orations: "My Lord Jeffreys tries a Case" and "The Doctrine of Judicial Precedents at the Common Law."

Comparing these two programmes, one sees little difference between the Harvard graduates of 1801 and those of 1901; but a study of their biographies would show the former to have been legal "infants," and the latter to have been full-fledged men. For the average age of the "Naughty-one" man of the nineteenth century was not far from seventeen years, while that of the twentieth century graduate was close upon twenty-three. But did these 1901 men receive, even with the six extra years, better education than their great-grandfathers? In range of subjects and in variety of information last year's graduate is, of course, far in advance of his ancient predecessor; but in maturity of mind, in poise of judgment, in ability to deal with men and affairs, it is doubtful whether the twenty-three-year-old bachelor of to-day is even on a par with

the seventeen-year-old alumnus of a century ago. Men matured earlier then, for they had to. Life was too hard and serious for dallying or play. Educated men were scarce; and, like subalterns in time of war, they were promoted rapidly. Therefore, those forebears of ours were men of weight, of position, of large family responsibility, at an age when their great-grandsons are, intellectually and socially, little more than boys. On the other hand, while those great-grandfathers matured earlier, they also decayed earlier, and were shelved as old men at sixty,— at an age when most of last year's graduates will be at the acme of their power and usefulness.

Six years, however, is a long and pregnant period in early manhood; and, while it is certain that the Hebrew orator of 1801 was delivering his oration too early, it is almost equally certain that the Salutatorian of to-day (if his age be twenty-three) is making his bow too late. Especially is this true if he is afterward to follow a profession; for, adding the three or four years of professional study, and the five or more years of reputation-building, he may be past thirty before he can even think of marriage or can play any weighty part in social and political life. There is danger of loss to the State and to the individual in this. And the man who does not reach a fair elevation in his profession until after his thirtieth year too often gets to that point heart-sick, dispirited, at odds with himself and with the world, incapable, therefore, of great achievement, and likely to spend the rest of his life, not looking forward to what he may do, but backward to what he might have done. There is a large measure of truth in De Maistre's epigram: "Qui n'a pas vaincu à trente ans, ne vaincra jamais." Those two great passions which lead a man to marry and to seek fame are passions belonging always and fundamentally to youth.

Mainly for these reasons, Harvard has decided to give the bachelor's degree in three years, the President of Columbia pro-

poses that it be given in two years, and other colleges are questioning the wisdom of their traditional four-year course. All these plans to end college life at an earlier age, however, have in view almost exclusively those students who are aiming to be professional men. There seems to be little thought for that much larger proportion of youth with whom their college course is the last culture period of all their lives. These men need, not a shortening, but a lengthening, of the college course; for, if the college period does them any good at all, it ought to be a prolonged experience, teaching them, if it can, the value of the intangible; filling them, if they are susceptible of it, with that genuine "sweetness and light" of which Arnold spoke; laying up for them, if they will but receive it, a treasure of culture for leisure and old age.

The simultaneous giving of both culture and a professional training has been the most serious problem with which the Institute of Technology has had to deal. From the beginning its Faculty have had to wrestle with the difficulty of doing in four years what should be spread over a period at least half as long again. To put six years' work into four has been, of course, impracticable. The most that could be done has been to insist that every graduate should have as much "culture" work as the very exacting demands of professional preparation would admit. But a youth eager to fit himself in the highest degree as an engineer, a chemist, or an architect, is naturally impatient of studies which to him seem but remotely connected with his profession; and he inclines to slight those, as far as he may, in order to devote himself to what he considers "paying" subjects. To expect, therefore, that graduates of the Institute will gain in four years the same culture and the same breadth as result from a four years' college course followed by three or four years of study in a professional school is to look for the impossible. Even were the radical suggestion of President Butler followed out, the young man who should take that two years' course for the A.B. degree and should supplement

it with a three years' professional course would live in a college atmosphere for one year longer than does the usual graduate of the Institute of Technology.

This condensation of the university course is not the outcome of deliberate choice by the Institute. It is the result, on the contrary, of necessity, of an urgent demand that a graduate of the high school or academy shall be made a bachelor of science in the same time in which his fellow-pupil becomes a bachelor of arts. It is quite certain that to most of the young men who come to it the Institute would always say: If you have time and means, take, not four, but six or even seven years to prepare yourself for your profession. The present delay will mean future speed; for it will give you a breadth and strength of mind, a power over yourself, a fulness of resource, that will be strong factors in lifting you to the very top of your profession. Take care only not to use up so many years in preparation that when you come to your life-work, where success may depend not only upon breadth of knowledge, but also upon initiative, push, tireless energy, and self-reliance, you may not have lost that youthful spring and *verve* and enthusiasm without which great strokes of independent work are well-nigh impossible.

This, then, is the Institute's problem,— it is the problem of every modern college so far as concerns education for a professional career,— how to give a young man the greatest amount of culture and of professional preparation without keeping him so long under tutelage as to weaken that buoyancy or to destroy that initiative which are the strongest weapons of youth, and, furthermore, without holding him back so long from financial independence that his marriage — if, indeed, he marry at all — takes place too late for his own good and for the welfare of the community.

The solution of this problem involves many elements. It demands the improvement, the enrichment, the virilizing, of preparatory school work, so that a boy shall arrive at the age of sixteen not only fitted to enter the usual college course, but also mentally and

morally matured to a degree where that course will be of its fullest use and value to him. It demands that he may take that college course in three years and may elect his work in it with a view to the special needs of the profession which he is to follow. Having realized these essential conditions, a graduate of Harvard, of Yale, or of any leading college, should be able to enter the Junior year of the Institute at the age of nineteen or twenty, not only fitted to take up the work of that year, but with a breadth of culture, with a maturity of view, with an appreciation of his educational needs far greater than it is possible to find in a young man who has come to the same point directly from the high school and by way of the Institute's Freshman and Sophomore years.

Having secured his A. B. at nineteen and his S.B. at twenty-one, such a young man could then, with the greatest profit to himself, and with the surest promise of eminence in his profession, take one or more years of graduate work at the Institute, gaining in this way a command of himself and of his knowledge, an insight into the true values and the real possibilities of a scientific profession, to which no young man going to work immediately upon graduation as a bachelor can readily attain.

That this general plan of professional preparation is coming more and more into favor is evident from the increasing number of graduates who seek admission to the higher classes of the Institute, and from the ever-stronger demand for the development of graduate courses at the Institute itself. This tendency it is of the utmost importance for the Institute to foster and to strengthen. Without any neglect of the ordinary undergraduate, these young men who are taking the longer and better road toward the professions should be the especial thought and care of the Institute authorities. No greater encouragement can be given to them, no surer way can be found to develop them into the strongest products of the Technology training, than by treating them as men with a serious purpose, an intelligent aim, and a dignified scorn of all subterfuge or evasion. The often astonishing transformation of a careless, happy-

go-lucky collegian into a serious, earnest student of medicine or law is peculiarly true of graduates of other colleges who come for professional training to the Massachusetts Institute of Technology. With most, if not with all, of them, this Institute course in engineering, in chemistry, in architecture, has been a long-contemplated goal; and every facility should be theirs to realize to the fullest measure this long-cherished aim. To men who have had such a course in the "Humanities" as a reputable A.B. denotes, any quibbling over minor requirements of the first two years of the Institute courses would be almost an impertinence. To men arrived at the maturity of mind which these college graduates possess, a refusal to accept reasonable equivalents for subjects nominally required for Institute graduation would be to exalt the letter of technicality over the spirit of true education. From its beginning the Institute has stoutly maintained that true culture is not the prerogative of the Greek and Latin tongues. With equal breadth it will now acknowledge that true professional training is not the prerogative of any single series of technical and general studies. The man strongest in his profession is he who, while broad in mind and in experience, is not lacking in the enthusiasm and interest of youth. Such breadth and enthusiasm surely are not fostered by tying college graduates down to a routine too strict, to a sequence of subjects too hard and fast.

For nearly forty years the Institute, in the face of every difficulty, has maintained that professional study without culture study is incomplete, and often fails to develop the passion for intellectual interests which will result in lifelong habits of study. With longer experience, better knowledge, and the increased dignity which has come to the scientific professions, the general public is beginning also to see this truth. More and more, therefore, are young men seeking a preliminary college education before taking up the courses of the Institute. More and more are they asking that those courses be prolonged, the better to fit them, through research and

the study of pure science, for eminence in their several professions. These facts the Institute must appreciate and welcome. These young men it cannot too heartily encourage. This happy tendency it will surely further by recognizing that the college graduate is a man who knows what he wants, is an honest student anxious to get all that he can out of the Institute courses, is a genuine scholar for whom great elasticity of rules and freedom for intellectual endeavor not only are possible, but are highly desirable.

THE PROFESSIONAL SOCIETIES AT THE INSTITUTE

To-day, when the students of the Institute number over sixteen hundred, and the majority of the courses have their Professional Societies, it is perhaps difficult to realize the different condition of things in 1881, when the student-body numbered less than four hundred, and societies, not only of a professional nature, but of any description, were practically unknown. The Nestor of the Professional Society movement, if it may be so called, was a club which at the present time would be called a "Local," and not a "Professional" Society. This was the 2 G Society, which, organized by the members of the course in Mining Engineering, was established in 1881. While its objects were in general identical with those of the modern Professional Society, its proceedings were, in a measure, secret, and it never had the co-operation of the Faculty in its work, to the extent, at least, that the societies now have. For the origin of the movement I may quote from the editorial account given in *The Tech* for Dec. 14, 1881: —

The idea of forming a society of miners originated with Mr. Leonard,* and has been very successfully carried out. In the society, records of the school affairs are kept, examination papers are

* A Course III. student in the class of 1883.

filed, the members prepare together for examinations, and discuss matters of general interest to the department. Such an organization tends to ally the students more closely, and can, by the records it keeps, be of great benefit both to its present and future members. . . .

The 2 G had been in existence for somewhat over a year when the mechanical engineers followed the precedent of the miners, and established Σ M. E. It is in this society that the Professional Society of to-day has its real ancestor. In a small booklet published by this society in 1883, is given an account of its origin and objects, meetings, membership, and excursions. Under "Origins and Objects" we may read: —

On the 30th of November [1881] a paper written by Mr. T. B. Carson, a member of the Senior Class in Mechanical Engineering, appeared in *The Tech*, proposing the organization of a debating society, of which all students of the school should be members. The proposed object of the society was to give its members an opportunity to gain skill in addressing an audience.

On the morning after the issue of Mr. Carson's paper, an energetic discussion was started, by members of the Junior Class in the Department of Mechanical Engineering, as to the propriety of forming a society whose members should all be connected with the Department of Mechanical Engineering. . . .

On January 11 an editorial note appeared in *The Tech* as follows: —

The paper by T. B. C., in a recent issue of *The Tech*, calling attention to our needs of societies, and of more general intercourse between the students, has already borne fruit in the shape of a mechanical debating society, which has been lately organized. The objects of this society, as set forth in the constitution, are the furtherance of a knowledge of subjects of mechanical interest and the attainment of readiness in debate. Its meetings are held on Thursday afternoons of each week, when appropriate topics are discussed, or papers on matters of special interest are read by members. The enigmatical initials will probably be recognized by students of mechanics as denoting the sum of all the forces of the department; and, this being the case, a resultant of corresponding magnitude will be expected.

Unfortunately, the good wishes expressed in the last sentence were not destined to be fully realized; for it was only two years after its founding that Σ M. E. ended its active existence, not, however, without having accomplished, in that short time, much good work. While it lasted, its meetings were many and the interest in the discussions considerable. The most noteworthy achievements were its midwinter excursions in the years 1882 and 1883, of which there are detailed accounts in the society's pamphlet. In the first year about twenty-five of the leading machine manufactories and similar institutions through Western Massachusetts and Connecticut were visited, and in the following year an excursion of like nature was made to many manufacturing works in the vicinity of Philadelphia. At this time the society numbered about sixty members. Considerable space has been devoted to Σ M. E. because, having substantially the form of the present Professional Society, it worked out, from the beginning, almost all the features which form the objects of the modern organization. Its life, however, was that of the sky-rocket: it was brilliant while it lasted. In this connection, it is interesting to read in the issue of *The Tech* for February 8, 1882, an editorial written by a member of the Σ M. E.: —

There seems to be a lack of energy in the Department of Civil Engineering as a body, such that the few who have been endeavoring to organize a society for the purpose of debate, etc., report that their efforts are fruitless. . . . Every mechanical, however, takes a personal interest in the affairs of his department; and one of the best proofs of this statement is seen in the rapid growth and immense success which have attended their society. . . .

As a comment on the rudeness of Fate, it may be said that, in less than two years after the publication of the above, Σ M. E. was dead.

In the meantime the members of the course in Civil Engineering had been agitating the question of forming a society. The members of the class of '84 commenced the work of forming such an organization; and the result was the Γ Σ Υ, a society planned on general lines like the 2 G, to which any regular civil, or "any

special making civil engineering his principal study," was eligible to membership. As in the 2 G, certain transactions of the new society were kept secret.

Thus there were, in 1882, three Professional Societies: the 2 G, Γ Σ Y, and Σ M. E., all in a more or less flourishing condition. There seems, indeed, to have been a general influx of new life in the "college spirit" at the Institute at this time. Three years later, however, we find a different condition of affairs,— at least among the societies. An editorial in *The Tech* for February 11, 1885, states the question comprehensively: —

At an institution of so great many students as the Massachusetts Institute, it seems a little strange that there should be so small a number of secret societies, while in many colleges of one-third the size there are six or more. Here we have but three, the 2 G, a chapter of Σ X, and Γ Σ Y.

The 2 G, whose membership is limited exclusively to students of mining, is the oldest, largest, and most active of these. Conducted as it is upon a sound basis, from present indications it bids fair to continue at the head of Institute Societies. The chapter of Sigma Chi . . . is very quiet, and shows little activity at the Institute; and the same may be said of Γ Σ Y, the society of the civil engineers. In addition to these may be mentioned the new society of the mechanicals and the class society of the Sophomore Class, both of which are non-secret. As in each of the three first-named societies the membership is not over fifteen, we are safe in saying that, out of five hundred and seventy-nine students in the School of Industrial Science, but fifty are members of secret societies.

Strange to say, that since Σ M. E., a most worthy organization, died with the class of '83, there have been not even any scientific or engineering societies here. Probably, however, students of the Institute find the meetings of the Society of Arts and the frequent lectures of the Lowell Institute, in addition to their studies, a sufficient outlet for their energies in this direction. Nevertheless, we think it would be well to revive Σ M. E.

In the same year two more societies were founded, the Biological Club and the K_2 S. The former was established in March, 1885, by members of the Biological Department with some gentlemen studying in the laboratory. In the following autumn K_2 S

was organized in the Chemistry Course under the same general form as that of the 2 G. The Biological Club was, strictly speaking, not an undergraduate organization like the others.

And this brings us to a consideration of what is meant by "Professional Society." In the earliest *Technique,* published in the fall of 1885, the 2 G and the K_2S, both in a measure secret societies, are classed with the class societies and others which were not secret, under "Local Societies." In the *Technique* of a year later the Architectural Society is classed likewise. It was not until the issue for 1891 that the Professional Societies were grouped and distinguished from the many Local Societies. Thus, while at the beginning a semi-secret society, like the 2 G, might be substantially a Professional Society, the latter name has come to be applied to non-secret organizations to which all who pursue a certain course are eligible, and whose chief object is the extension of technical knowledge.

On October 15 of the year 1886 a club of modest pretensions was formed by a few members of the course in Architecture. It was called "The Sketch Club," and was destined to be short-lived, or at least its name was; for that same autumn it was exchanged for the more dignified one of "Architectural Society." The first regular meeting of the society was entirely devoted to an address given by Mr. O'Grady,* who, among other suggestions, laid especial stress on the monthly publication of an architectural paper representative of the work done by the department, and containing the "first-mentioned" drawings of the students. This paper, published under the title of *The Technology Architectural Review*, was the publication of which the *Architectural Review* of to-day is a direct outgrowth. The Architectural Society was the first open, undergraduate Professional Society, since the death of Σ M. E., to be established; and, of all the strictly professional organizations, it has had the longest continuous life.

Two years later, in the latter part of 1888, the Tech Electric Club was formed; and from this organization the Electrical Engineering Society was destined to be an outgrowth. From this

* Then an instructor in the Architectural Department.

time to the present the history of the movement may be told with less detail. Since the establishment of Γ Σ Υ the course in Civil Engineering had had no technical society. The Γ Σ Υ had gone out of existence some time between 1885 and 1887; and it was not until February, 1889, that the Civil Engineering Society was formed. The following year it considered publishing a journal devoted to the "most interesting topics in civil engineering," but little came of the project. Of all the Societies, none has played the part of the phœnix to so great an extent as the Mechanical Engineering Society. It has the distinction of having been the pioneer, and yet the distinction has failed to keep it always alive. It has begun its career in 1882, in 1891, in 1897, and in 1902. The Geological Club, similar in make-up to the Biological Club, was founded in 1893 and lived until 1900, ending its existence, I fancy, because there were no more geologists. In 1897 the Mining Engineering Society was formed, and three years later the members of the class of 1901 in Course XIII organized the Naval Architectural Society. The newest arrival is the Chemical Society, its advent having taken place in the autumn of 1902.

Thus is summed up the history, in a brief way, of the various Professional Societies. The total number of Societies is to-day seven. It is interesting to note that only in recent years, excepting in one or two Societies, has any emphasis beee given to aught but the professional "side," the element of social intercourse among the members having been undeveloped. And this consideration of "sides" brings us to the question of organization and objects.

Broadly speaking, the societies are organized in the same form and for the same general purposes. The statement of the objects of the Σ M. E. in 1882 is substantially a statement for all societies of to-day. It would be easy to match the following sentiment, if not the words, in all the constitutions: —

This society is organized with the objects of awakening and maintaining an active interest in Mining Engineering among its members, and in aiding in their intellectual advancement and improvement.

All one needs to do is to substitute "Architecture" or "Chemistry" for "Mining Engineering," and this forms the *credo* of each society. As to organization, all have the usual form, having for officers president, vice-president, secretary, and treasurer, and the various committees according to the necessities. In general, membership is given to the students of the Senior and Junior years, though there are some exceptions to this. The Instructing Staff of the Department have uniformly the standing of honorary members. The methods for achieving their ends vary, of course, in the different organizations; but all have adopted the system of meetings at which papers are read, either by undergraduate members, by a member of the Instructing Staff, or by some professional man unconnected with the Institute. Unfortunately, these meetings have been, owing to the pressure of school work, rather more a matter of constitutional declaration than of actual occurrence. Besides these meetings, certain societies make visits to different manufacturing plants or other commercial establishments. The conception of the society as a means of social intercourse among its members has long been in existence; but the condition of things in general at the Institute, at present at least, hampers its development. Nevertheless, much has been done in the last three years, in the way of Bohemian Dinners and Smoke Talks, to improve this "side."

In looking at the Society in relation to the undergraduate member, it is, of course, from the nature of things, difficult to state the concrete benefits which the society creates. Without any question its chief value is the helping to bring the students into closer relations. The varying degrees of association are very noticeable in the different courses, for the work of certain courses makes the exchange and interchange of ideas and criticisms more necessary than in the work of others. The Society, once established, unquestionably helps to bring about this exchange of ideas. A second benefit to the student is the light which may be thrown on his professional work. Organized with the co-operation of the Instructing Staff, it provides a definite, if limited, outlook on the professional world. The practice of speaking upon technical or

industrial subjects is of course certain in its value. The excursions to manufacturing works, the privilege of hearing older men speak on topics of interest, are advantages great enough to cause one to wonder, as he looks back over the history of the Societies at the Institute, why some were established so late, and why others have had such a halting development. There is a third benefit,— a benefit first, perhaps, to the department, but indirectly to the student; and that is that through co-operation, the members of a course may do much by way of gifts and the like toward the establishment of traditions and "memories," and everything which goes to form *l'esprit de corps* of the course.

This much by way of eulogy: something remains by way of criticism. The Societies do not entirely realize their aims, chiefly because of lack of time and of adequate facilities. The problem of a special room has partly been solved by the remodelling of the old Lowell School of Design on Garrison Street for the use of the students. This provides for a long-felt need. It is, however, only a first step; others, which will undoubtedly follow, are much to be desired. Finally, it may be said that this article does not pretend to be in any way exhaustive. The attempt has been made simply to present the main lines of development, and the leading purposes of the Professional Societies at the Institute. To tell what they have accomplished in the past twenty years would require an article too long both for the allotted space and for the reader's patience.

I. Rayne Adams, '02.

OPPORTUNITIES IN THE COAST AND GEODETIC SURVEY *

Are there opportunities for the graduates of the Massachusetts Institute of Technology for temporary or permanent employment in the Coast and Geodetic Survey, of such a nature as to appeal properly to the love of adventure or travel, the love of good work and accurate observations, or to ambition for professional success?

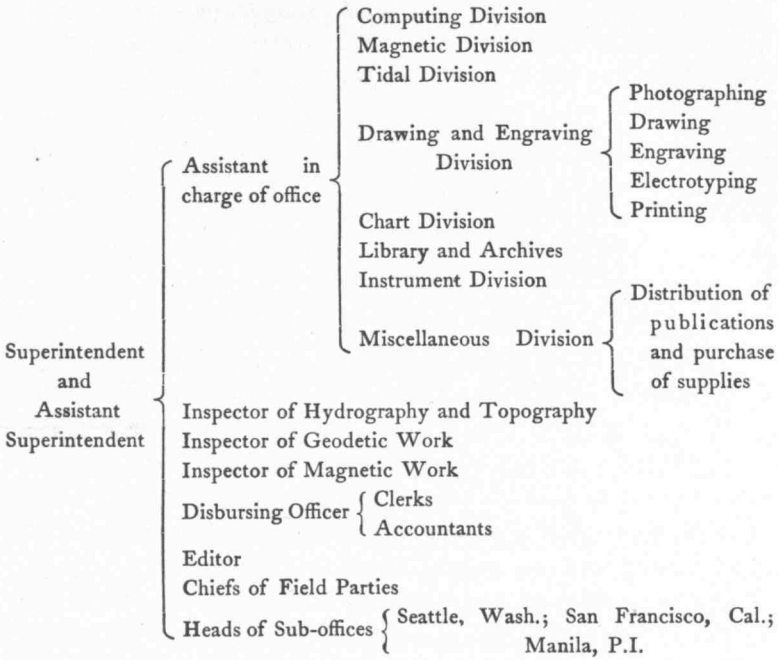
The Coast Survey was the first scientific bureau of the government. Among its traditions is one that the accuracy and reliability of its publications and of its field-work should always be up to the highest attainable standard,— a tradition which appeals to the best in a man.

The primary purpose of the organization is the preparation and publication of charts for the benefit of navigation. Incidental to this work, or as logical expansions from it, there is a great variety of activities within the survey. The making of a first-class chart is not a simple matter. In the field some of the steps in the process are the sounding of the ocean and harbor bottoms; the location of these soundings from fixed points on shore; the triangulation to furnish the fixed points; the primary triangulation extending over great distances to co-ordinate separate charts, with its accompanying measurement of bases; the astronomical determination of longitude, latitude, and azimuth; the observation of the tides for the reduction of the soundings and to furnish predictions to accompany the charts; the investigation of currents and of the magnetic declination; the plane table surveys to furnish a fringe of accurately determined topography along the coast; and the study of changes due to waves and currents. In the office the computations of triangulation, astronomical determinations, and tidal observations, must be made, the finished drawing incorporating all the results of the field-work must be prepared, the copper plates en-

* For the earlier papers of this series contributed by the Washington Society of the Massachusetts Institute of Technology, see Technology Review, Vol. IV., pp. 57, 195, 316 and 485.

graved, and charts printed and issued to the sales agencies. All these activities are carried on within the Survey itself.

The following diagram shows the organization of the Coast and Geodetic Survey: —



The Computing Division, Magnetic Division, and Tidal Division are each essentially computing divisions. The Magnetic and Tidal Divisions attend to the reduction of observations in those special lines; and in the Computing Division computations connected with triangulation, precise levelling, astronomical observations, and gravity determinations, are made.

Each of the three Inspectors — of Hydrography and Topography, Geodetic Work and Magnetic Work — is responsible for the plans of work in his own line, and is charged with such supervision as may be necessary to insure that the plans are carried out economically and effectively.

Each field party is a temporary organization created for a spe-

cific operation by an order of the Superintendent, and is entirely under the control of a field officer assigned to it as Chief of Party.

The Survey has its own fleet of twelve steamers and six sailing vessels, aside from launches and other small craft. The assignment of an officer of the field force to command a vessel carries with it necessarily the command of the whole force on board the vessel, including watch and deck officers as well as crew.

Within this organization there are three good classes of opportunities for Technology graduates.

The draftsmen on the office force, engaged in preparing finished drawings, are appointed upon a civil service examination, starting at a salary of $700 to $1,000. At present there are, as a rule, about eighteen draftsmen in the service; and nine receive $1,600 or more per year. The draftsman who understands the field-work, or at least has had such a training as to enable him to appreciate the field methods, has a decided advantage over one who has an office knowledge alone.

There are upon the computing force in the office at present about seventeen regular computers, of whom seven receive $1,600 or more, the highest salary paid to a computer being $2,000. The appointments are based on civil service examination.

The third and best opportunity for the Technology graduate is on the field force, which is now composed of forty-eight Assistants and twenty-nine Aids. Of this list thirty receive salaries of $2,000 or more, the highest salary paid being $4,000. The grade of Aid is the lowest in the field force, and the appointments are based on civil service examination. The salary at beginning is now $720 per year, but Congress has been asked to increase this to $1,000. These statements of salary are, however, somewhat misleading, unless taken in connection with the fact that the necessary travelling expenses incurred in the line of duty are paid by the government, and that, in addition to his salary, each field officer is paid an allowance for subsistence to cover the ordinary living expenses while on field duty. They are, therefore, equivalent to a considerably higher salary than a purely office position.

The Aid is in the regular line of promotion to the highest posi-

tions in the Survey. They are subject to assignment to either field or office duty. Nearly all administrative positions in the office at Washington, from that of Chief of Division to the highest rank, are open to and are now filled by members of the field force. The present Superintendent was promoted to that position from the field force of the Survey.

The Aids, like the Assistants, are subject to assignment either as chiefs of party or as subordinate officers on parties engaged in the determination of the magnetic elements, in secondary triangulation and astronomical determinations for the direct control of topographic and hydrographic surveys, or in primary triangulation on a large scale in the interior with the corresponding astronomical determinations; in topographic surveys along the coast; in hydrographic surveys in bays and harbors, or in the open sea; and in the determination of the value of gravity. Each of the steamers and sailing vessels which make up the fleet owned by the Survey is commanded by an Assistant or Aid detailed temporarily for that purpose. During the intervals between field seasons the Assistants and Aids are assigned to office duty. The range of duties to which the member of the field force is assigned is, therefore, quite varied. The operations of the field force extend over a vast range of territory, covering not only the continuous portion of the United States, but Alaska, Porto Rico, Hawaii, and the Philippines.

For many years just preceding the Spanish War the Survey vessels were, as a rule, commanded by naval officers. With the outbreak of the war these officers were necessarily withdrawn from the Survey. A member of the regular field force was then assigned to the command of each vessel, and that arrangement has become a permanent one. The effect of the war was, therefore, not only vastly to extend the area to be covered by the operations of the field force,— the new area added in Porto Rico and the Philippines being portions in which surveys were urgently needed,— but also to throw upon the field force additional duties as commanding officers on the vessels. The force was not expanded in proportion to the increased calls made upon its energy. There is, as a result, an unusual opportunity for new members of the force to show

their ability. They are of necessity placed promptly in positions of considerable responsibility. This fact, combined with a system of promotions on merit, furnishes an unusual opportunity for the man of ability to rise. As illustrations of the fact that unusual responsibilities are thrown upon comparatively new men, several cases might be mentioned in which an Aid has found himself in charge of a field party within a year of the date of his appointment. The principal disadvantage under which the Aid finds himself is that fixed salaries are appropriated by Congress, and that promotions can seldom be made except to fill vacancies caused by death or resignation.

If the matter of the amount of salary which will probably be received during the first few years be alone considered, the graduate will probably decide in favor of some other branch of engineering; for he will find larger salaries offered in many other branches. If, however, he considers the permanency of position and continuity of employment, he will find the disparity in salary nearly offset by these advantages in the government service, especially if he enters the service for his life-work.

Let it be supposed, however, that a graduate of the Institute is considering whether he should enter the field service of the Survey with the intention of remaining in it for a few years only. Will he be likely to gain an experience and to secure a training and development that will fit him to gain success in other lines later, or will he find himself after a few years unfitted for any other occupation? Those whose conceptions of the government service are based, directly or indirectly, upon the traditions and actual conditions of the days of the spoils system will undoubtedly answer the question in the latter manner. But the days of the spoils system are passed. In most branches of the government service, success is now won by the young man by the same methods as in any other large organization. In the two great government Surveys, the Coast and Geodetic and the Geological, there is so little left of the methods of the spoils system that the vestiges need not be seriously considered.

Is the occupation of the field officer on the Coast and Geodetic Survey such as to dwarf his abilities or narrow his field of thought?

He travels sooner or later through all the States and Alaska and the Philippines, and perhaps to Europe. He becomes accustomed to all modes of life, from that of crowded cities, with all conveniences, to that of the desert or the coast wildernesses of the Philippines, with few comforts and no conveniences. His orders may take him to the interior on a reconnoissance or exploration; they may make him the officer in command of a vessel navigating the high seas or investigating unknown channels. The observations he is required to make vary from the roughest and most rapid reconnoissance surveys to the most exact measurements required in the determination of the figure of the earth. As his own disbursing officer while in the field, charged with the economical expenditure of large sums and subject to the restrictions of one of the most complicated accounting systems of the world, he must necessarily become a good accountant. In the organization and management of a field party, too far from headquarters to ask questions, he must necessarily learn the same lessons as the business man. In trying to improve the methods of observation used, he is dealing, as a rule, with pure science; and it should be remembered that the methods of the Coast and Geodetic Survey have been developed largely within the Survey. While upon office duty, he may be assigned either to routine computations, or to the preparation of results for publication,— an occupation which should develop his literary ability.

The idea that such a varied occupation can unfit a man for success in other lines is as absurd as the spoils system tradition which fosters the idea.

Government service is coming to be, as it should be, an accepted proof of ability and experience and a stepping-stone to national and international recognition.

JOHN F. HAYFORD,
Cornell, '89.

GENERAL INSTITUTE NEWS

CORPORATION NOTES

The two hundred and ninety-fifth meeting of the Corporation was held at the Institute, Dec. 10, 1902; and the annual reports of the President and Treasurer were presented. The main features of the Treasurer's report were as follows: The increase of receipts from tuition fees is stated to be $31,000, accompanied, however, by a nearly equal increase of expenditure. The result is a deficit for the year of nearly $6,000, which is less, however, than the corresponding deficit of the previous year. Mention is made of the purchase of a strip of land on Stanhope Street, and the erection of the Augustus Lowell Laboratory of Electrical Engineering; also, of the purchase of a tract of between eleven and twelve acres of land in Brookline at a cost of $113,000. Gifts are reported from Messrs. Samuel Cabot, A. Lawrence Lowell, Percival Lowell, and Arthur T. Lyman of the Corporation, and from other persons, the total amount of such gifts being nearly $70,000. Further payments are reported from the Walker Memorial Committee, the actual receipts, with accumulated interest, being $71,347.30.

The appointments reported by the Executive Committee were as follows: Charles Beardsley, Instructor in Economics; David Laforest Wing, '98, Assistant in Economics; Willis Harvey Towne, '02, Assistant in Modern Languages; Francis Cunningham Ware, A.B, Assistant in Inorganic Chemistry; Henry Abbott Ferrin, '02, Assistant in Mechanical Engineering; Lieut. Rupert Deane Worcester, Assistant in Military Science; Percival Lowell, A.B., non-resident Professor of Astronomy; Elihu Thompson, Ph.D., non-resident Professor of Applied Electricity. The following changes of titles were made: Professor George A. Osborne, Walker Professor of Mathematics; Assistant Professor Harry E. Clifford, Associate Professor of Theoretical Electricity; Professor Henry P. Talbot, Professor of Inorganic and Analytical Chemistry; Professor Arthur A. Noyes, Professor of Theoretical Chemistry.

The Executive Committee was authorized to present a petition to the General Court asking for a repeal of those sections of the Act of 1861 which restrict the use of the land on Boylston, Clarendon, and Newbury Streets. Mr. Frederick P. Fish, president of the American Bell Telephone Company, was elected a member of the Executive Committee to fill the vacancy caused by the resignation of Mr. Wheeler.

FACULTY NOTES

A standing committee of the Faculty has been appointed to take charge of correspondence and other methods for recommending graduates for appointment. Business of this kind has been carried on heretofore by the heads of the professional departments and by the secretary of the Faculty. The appointment of the committee represents not so much a change of policy as an effort to secure more thorough treatment than has heretofore been practicable.

An extended memorial of the late Professor Runkle has been presented to the Faculty by Professors Niles, Osborne, and Richards, as a special committee.

The most important and far-reaching matter of Faculty business has been the adoption of a plan for the Graduate School of Engineering Research, of which an extended account is else where given.

Numerous minor changes of the curriculum have been made, and others are likely to follow in the near future in connection with the work of the Faculty Committee on Courses of Study. The ten-hour course in Theory of Equations for the second term of the first year has been discontinued, and its essential subject-matter incorporated with the first term Algebra. The time released has been assigned, for the present, to additional work in English, for which need has long been urgent.

The time assigned to Descriptive Geometry in the engineering courses has been reduced by forty-five hours; and this change has been accompanied by unification of first-year work, eliminating to a great extent the previous distinction between courses which have had mechanical drawing in the second term of the first year and

those which have had a combination of mechanical drawing and descriptive geometry. The time set free in the second year is applied mainly to professional subjects.

The new Committee on Publications has effected various improvements in the form of the Catalogue, some of which have, however, not tended to secure its early issue. In particular, the register of graduates, which last year occupied not less than one hundred and fifty-three pages, will be materially condensed. It seems not improbable that in the near future it may be wiser to make this register a separate publication rather than to have so large a proportion of the Catalogue occupied by it. A list of students admitted from other colleges numbers not less than one hundred and twenty-eight, besides the four naval cadets sent by the United States government.

Besides the advance of entrance requirements to include both French and German, the Faculty is now considering the addition of a requirement in physics, to take effect in 1905. In this connection the following study has been made in the Secretary's office of the extent to which required work is now anticipated by entering students.

ANTICIPATION OF WORK BEFORE ENTRANCE

A larger number of students have in recent years not only passed entrance requirements, but anticipated a greater or less portion of the required work of the Institute course. A study of the records of 120 regular students of the class of 1906 has shown the following interesting results: —

Number of students under consideration	120
Aggregate hours of their anticipated work	27,765
Number of students anticipating any work	82
Average number of hours of work anticipated (by the 82 students)	338
Aggregate deficiency below normal number of hours in present term work (of the 82 students)	4,285
Number of students having any deficiency of hours	48
Average deficiency for 48 students	89
Excess of hours anticipated, available for future use	23,480
Average excess for 82 students	286
Total number of students	120

Number anticipating French II.	39 = 32%
Number anticipating German II.	19 = 16%
Number anticipating French I. or II. and German I. or II. .	27 = 22%
Number anticipating French or German (deducting duplicates) .	59 = 50%
Number of language courses anticipated	85

It appears from the above figures that two-thirds of the regular first-year students have anticipated required work, the average amount of anticipation being nearly equivalent to half a term's work. The maximum amount of work anticipated by any of the 120 men was 900 hours, or nearly two-thirds of a year's work. Most of these students are able to distribute the time gained in such a manner as to relieve the work of later years.

It will be noted from the table that 82 students who have anticipated, on an average, 338 hours retain 286 hours of that balance for use in the second term or in later years. The most frequent anticipation is of French or German, or both. Those students who have not anticipated the whole of the modern language work find it often practicable to continue it to completion at an earlier stage than otherwise. It will be seen that the average anticipation by students who anticipate at all is considerably greater than the 270 hours represented by the new entrance requirement in French or German; and, if the average anticipation is based on the total number of students, it will still be nearly equivalent to the new requirement, indicating, on the whole, that the new requirement is by no means excessive.

The meetings of scientific societies during convocation week have been attended by members of the departments of Biology, Chemistry, Mathematics, and Physics. Professor Gill is the new secretary of the chemical section of the American Association for the Advancement of Science.

President Pritchett represented the Institute at the inauguration of President Woodrow Wilson at Princeton.

Dean Burton was the official representative of the Institute at the inauguration of President Edmund J. James at North-western University, Evanston, Ill., and at that of Chancellor Frank Strong of the University of Kansas in October.

Professor Niles represented the Institute at the inauguration of Dr. Joseph Swain as president of Swarthmore College.

The Institute was represented at the twenty-fifth anniversary of

the opening of the University of Colorado and at the dedication of the new buildings of the Central High School of Philadelphia by members of the local alumni organizations.

At the November meeting of the College Examination Board, Professor Tyler was elected vice-president of the board in succession of President Thomas, of Bryn Mawr.

Professor Henry Mitchell, who was Professor of Physical Hydrography at the Institute of Technology from 1869 to 1876, has recently died. He was born in Nantucket in 1830, being the son of William Mitchell, the astronomer. His sister, Maria Mitchell, was also well known as an astronomer. He took part in important engineering works in the harbors of Boston, Philadelphia, and other cities, also in the surveys of the Mississippi River and of the Panama Canal route. His publications were chiefly connected with tides, river currents, and other hydrological subjects. He was a member of the National Academy of Sciences and fellow of the American Association for the Advancement of Science.

After careful consideration of propositions in regard to the organization of a student society based on scholarship, the Faculty has decided to take no present action in the matter.

A system of conferences has been initiated in the department of Mathematics with interesting results. The object of these conferences is to promote a consideration, by members of the department, of matters of common interest, including methods of teaching, relations with the work of other departments, and with secondary teachers, etc.

LOWELL FREE COURSES

Plans for a reorganization of the Lowell Free Courses are under consideration by a special committee of the Faculty. The present provisional intention is to systematize the courses and to adopt a more elementary technical training than is given to Institute students. It is expected, for example, that courses will be offered which may prepare young men to be foremen in various lines of engineering and chemical work. It is hoped, however, that the main advantages of the present courses may be retained.

Field Day Cup

By courteous permission of *Technique*, 1903

THE UNDERGRADUATES

TECHNOLOGY FIELD DAY, NOV. 15, 1902

Under perfect weather conditions and graced by an attendance of some three thousand spectators, Technology's second field day was a most successful affair. It went far in establishing the fact that it is an institution which has come to stay, and a worthy successor of the old "cane rush." The events contested between the two lower classes were the same as last year; namely, football game, relay race, and tug-of-war. The events were run off without hitch, and the officials are to be congratulated for their efforts. By special request of Dr. Pritchett the fences and grounds were unadorned by the paint that the classes have been in the habit of using in former years; and, although the grounds were held during the night before by the Sophomores, no great damage was done. Tech flags, class yells, and a full grand stand did much toward enlivening the scene.

The class of '05 repeated their victory of last year by winning the football game and the relay race, only losing the tug-of-war after a hard fight. After the games the usual rushing between the two classes took place, and it was not until after dark that the field was finally deserted.

THE FOOTBALL GAME

The winning of the football game by the Sophomores, by the score of 18–0, came somewhat as a surprise to those who had followed both teams during the year. The Freshmen's greatest handicap was in the kicking department, in which they were decidedly weak. Otherwise, the work of the teams was very nearly equal. P. S. Crowell, '05, was easily the star of both teams, both in offensive and defensive work. Captain Hill, Taylor, and Blount also did much toward winning the game. For '06, Geist's line hurdling and the defensive work of Williams and Henderson were the features.

'05 won the toss, and chose the south goal. At 2.30 the Freshmen kicked off to Taylor, who carried the ball back 13 yards. '05 immediately started in to rush the ball, and on six downs carried it to the centre of the field. Here Crowell fumbled; and '06 secured the ball, only to lose it again by a fumble. Taylor and Lindsly, each, made 10 yards through the line; but, on another fumble, the Freshmen secured the pigskin, and rushed it back to the middle of the field. A very weak kick of 7 yards by Geist, a hold for downs by the Freshmen and another kick of 10 yards, placed the ball in the Sophomores' possession, on their opponents' 40-yard line. At this point, by repeated hammering of the line by Crowell, the ball was advanced gradually to the Freshmen's 3-yard line, where Taylor was pushed over for the first touchdown. He also kicked the goal. Score: '05, 6; '06, 0.

On the kick-off Boggs fumbled the ball, and Henderson fell on it on the Sophomores' 40-yard line. Up to the end of the half the ball was kept in their territory.

Second half began by a surprise for the Sophomores in the shape of a series of rushes without signals by the Freshmen, in which the latter carried the ball some 60 yards. Here, however, '05 took a brace, and held for downs. On the next play Crowell made the sensational run of the day by carrying the ball 40 yards. After two exchanges '05 repeated its feat of forcing '06 back 40 yards by small gains. Taylor again carried the ball over, and kicked the goal. Score, 12–0.

By two long kicks by the Sophomores and two fumbles by the Freshmen the former secured the ball on the 15-yard line. After five rushes Wells was forced over for the third and last touchdown. Taylor kicked the goal. Score, 18–0. Two more rushes were allowed before time was called with the ball in the Sophomores' territory. The line-up was as follows: —

'05		'06
Blount, Green,	l. e.	Redding, r. e.
Lindsly, Gouinlock,	l. t.	Williams, r. t.

'05	'06
Whitney, Eastham, l. g.	Simpson, r. g.
Payne, Lane, c.	Breitzke, c.
Boynton, r. g.	Terry, Armstrong, l. g.
Schonthal, Lombard, r. t.	Henderson, l. t.
Boggs, Strickland, r. e.	Taylor, Clay, l. e.
Hill, q. b.	Abbot, q. b.
Crowell, Taylor, l. h. b.	Geist, r. h. b.
Fuller, Dean, r. h. b.	Van Amringe, Hertz, l. h. b.
Taylor, Wells, f. b.	Knapp, f. b.

Score: '05, 18. *Touchdowns:* Taylor 2, Wells. *Goals from touchdowns:* Taylor, 3. *Umpire:* Mock, Harvard Law. *Referee:* Young, Harvard Law. *Linesmen:* Roper and Franklin. Two 20-minute halves. *Timers:* Homer, '04 and Sawyer, '03. Time, 20-minute halves.

THE RELAY RACE

Between the halves of the football game the relay race was run off. Each class was represented by twelve men, each man running one-half a lap. The Freshmen took the lead in the first relay, but lost it in the second; and after that the result was never in doubt. '05 gradually increased their lead, and won by 50 yards. The time, which was much faster than last year's, was 6 minutes and 41⅕ seconds. The men ran in the following order: —

1905

1. Jewett (Captain).
2. Fisher.
3. Riley.
4. Dickerman.
5. Webster.
6. Ingalls.
7. Goldthwaite.
8. Snow.
9. Steele.
10. Turner, S. B.
11. Nichols,
12. Emerson, R. D.

1906

1. Howe.
2. Geist.
3. Libbey.
4. Clark.
5. Kelley.
6. Moffatt.
7. Williams.
8. Mann (Captain).
9. Steele.
10. Emerson, C. M.
11. Coe.
12. Wilson.

THE TUG-OF-WAR

The tug-of-war proved to be the most exciting event of the day. Twenty-five men from each class lined up on the rope against each other. The Sophomores determined to make their previous victories complete, and the Freshmen determined to get some revenge in this their last chance. At the fire of the pistol the Sophomores began gradually to pull the red ribbon toward their post. At about six inches from the mark it was seen to stop and turn in the opposite direction. Inch by inch the Freshmen regained their lost ground, and finally pulled the ribbon by their post. The teams were composed as follows: —

1905

1. Page.
2. Rathbone.
3. Perry.
4. Barlow.
5. Bennet.
6. Nabstedt.
7. Simpson.
8. Barnes.
9. Eaton.
10. McLane.
11. Turner, W. C.
12. Eaton, W. M.
13. Thomas.
14. Curtis.
15. Spaulding.
16. Rogers.
17. Motter.
18. Fick.
19. Ayers (Captain).
20. McManus.
21. Morrill.
22. Seaver.
23. Prentiss.
24. Abbott.

Anchor, Paquet.

1906

1. Lawrence.
2. Howes.
3. Gibbons.
4. Stewart.
5. Coe.
6. Ross.

1906

7. Tripp.
8. Wright.
9. Rausch.
10. Simmons.
11. Spencer.
12. Kane.
13. Soule.
14. Knight.
15. Fallon.
16. Fletcher.
17. Hammett.
18. Stoddard.
19. Hutchins.
20. Hayes.
21. Friend.
22. Polhemus.
23. Hursh.
24. Mathesius (Captain).

Anchor, Moore.

FIELD DAY DINNER

On Saturday evening, December 6, the Hon. Eben S. Draper, of the Corporation, gave a dinner at the "Tech Union" to the Freshmen and Sophomores who took part in the field day games. The young men were invited to meet President Pritchett and the Advisory Council on Athletics. About one hundred and fifty responded. After a well-served dinner informal addresses were made by Mr. Draper, Dr. Francis G. Peabody of Harvard University, President Pritchett, Dean Burton, Major Frank H. Briggs, Professor Tyler, and Mr. Munroe. During the dinner the Cabot loving-cup, upon which the name of the victorious class is each year inscribed, was filled with cider, and was passed from hand to hand, each man rising, announcing his name and residence, and drinking to the class of '05. After the speaking there was singing and general sociability.

TECH UNION

The field day dinner, above referred to, was the first social event held at the new "Tech Union." This union is a temporary substitute for the proposed Walker Memorial Building, and occupies the rooms over the mechanical laboratories, formerly given up to the Lowell School of Design. There is a common room, pleasantly decorated in deep red and white, a smaller committee-

room, tastefully furnished in green, and a kitchen, provided with all appliances for the serving of simple dinners. A steward will be in constant attendance, ready to furnish, at the lowest possible figure, dinners for the various class organizations, professional societies, and other social gatherings of the students. Excepting for the necessary furnishings, including a piano, the rooms are as yet undecorated. A committee consisting of L. H. Underwood, '03, H. L. Morse, '03, C. L. Homer, '04, Norman Lombard, '05, and William Neilson, '06, has been appointed to secure the co-operation of the classes in providing suitable decoration.

The first Saturday evening dinner at the "Union" was held on December 13, and fifty-six men were present. Mr. Wells, the recorder, represented the Faculty; and an admirable dinner, at twenty-five cents per plate, was served. Some members of the Tech orchestra were on hand, and there was much good music and singing. It is proposed that similar dinners be served every Saturday.

The first Sunday afternoon meeting at the "Union" was in the nature of a conference between the President and the students as to the use to which these rooms might best be put. At the second Sunday afternoon, on December 14, the Rev. Charles F. Dole, of Jamaica Plain, gave an address on "Success." These Sunday afternoon gatherings are not intended to be religious meetings, in the ordinary sense of the word, but are planned to furnish opportunity for the students to meet one another, and to listen to addresses upon, as well as to discuss, serious and important questions.

On December 11 the class of '04 held its annual dinner at the "Union," about one hundred being present. Addresses were given by H. V. Doherty, M. L. Emerson, M. G. B. Harrington, Professor Clifford, G. E. Atkins, G. A. Curtiss, and Mr. Blachstein.

The Senior "Smoker" was held at the "Union" on December 15, Professors Clifford and Wendell of the Faculty being present.

On Christmas eve Dr. and Mrs. Pritchett held a reception at the Union for those who were unable to be at home for the holidays. Mr. Fred E. Kendall of the Apollo Quartet sang several selections, and the singing by the whole company of a few Christ-

mas carols made a fitting close for a Christmas eve which those present will not soon forget, especially as each man received some little souvenir of the occasion before leaving.

TECH Y. M. C. A.

On October 3, in the general library of the Institute, the Y. M. C. A. gave its annual reception to new students. About three hundred were present; and Dean Burton, Professor Porter, and Mr. E. S. Baker spoke.

The Association was even more active than usual this year in furnishing information to new students at the Institute. For a number of days at the beginning of the term, one or more Y. M. C. A. men were stationed in the hall of the Rogers Building, distributing handbooks of information, and telling new students how to register, and especially how to find good and decent lodgings. The Association has been given an office on the first landing of "Engineering B.," which will serve as a most valuable bureau of information for the students throughout the year. In these ways, and through its student house at 241 West Newton Street, the Y. M. C. A. is doing much good work for the young men of the Institute, work which is highly appreciated by the authorities.

The Bible-study classes began their meetings on Sunday, October 12. Two classes are conducted: one, led by Mr. Kenison of the instructing staff, to study the Acts and Epistles; the other, led by Mr. Smiley, intercollegiate secretary, to study the life of Christ.

The Student Club for social work in the South End, under the auspices of the Tech Y. M. C. A., held its first meeting November 11. The club has the use of rooms in St. Stephen's Church at No. 2 Decatur Street. A reading-room is open there for men every evening, in which the leading magazines and daily newspapers, including German, Italian, and Hebrew papers, are kept. In connection with this, classes are run to prepare men for the civil service examinations. There are also classes for elementary work in reading, writing, spelling, English, history, and arithmetic. For those who wish more advanced work there are classes

in chemistry, elementary physics, steam boilers, telegraphy, electricity, and mechanical drawing.

President Pritchett addressed the Y. M. C. A. meeting December 9, giving a practical talk on "The Professional Man's Relation to Society." There was a large attendance. All students are most welcome at these meetings.

CLASS AND OTHER OFFICERS

Following are the officers of the Senior Class: president, George W. Swett; first vice-president, Hewett Crosby; second vice-president, R. B. Williams; treasurer, E. J. Ruxton; secretary, C. P. Nibecker; board of directors, O. P. Scudder and T. E, Sears; Institute Committee, H. S. Baker and H. S. Morse.

The officers of the Junior Class are: president, P. M. Smith; vice-president, J. F. Card; secretary, Currier Lang; treasurer, C. A. Wentworth; board of directors, H. W. Rowe and Walter Hadley; Institute Committee, L. G. Bouscaren, Jr., and W. W. Cronin.

The Sophomore Class officers are as follows: president, R. N. Turner; first vice-president, H. W. Kenway; second vice-president, W. E. Simpson; treasurer, C. W. Johnston; secretary, R. H. W. Lord; board of directors, T. Green and T. E. Jewett; Institute Committee, A. J. Amberg and T. E. Jewett.

Institute Committee.— The officers of the Institute Committee are: George W. Swett, '03, president; P. M. Smith, '04, vice-president; A. J. Amberg, '05, secretary and treasurer; W. W. Cronin, '04, custodian of the trophy room; and H. S. Morse, '03, representative to the Association of Class Secretaries.

Walker Club.— At a meeting of the Walker Club, October 16, the following officers for the year were elected: president, M. H. Schwartz, '04; secretary, A. Peabody, '04; Executive Committee, E. P. Turner, '03, R. F. Lovejoy, '05, D. R. Dewey; Entertainment Committee, A. Peabody, '04, D. K. Keller, '04, L. W. Hammett, '05.

On November 25 the club debated the subject, "Is Municipal Control of Street Railways Advisable?"

PROFESSIONAL SOCIETIES

Electrical Engineering Society.— At the Electrical Engineering Society "Smoker," on the 10th of December, Professor Hollis, of Harvard, spoke on the life of one of Germany's leaders in electrical science, Werner von Siemens, of the firm of Siemens & Halske. The society voted to accept the invitation to hold joint meetings with the local branch of the A. I. E. E. for the discussion of electrical subjects. Members will be provided beforehand with printed copies of all papers which are read at these meetings, thus enabling them to inform themselves on the topic under consideration.

The officers of the society are: J. W. Welsh, president; R. W. Eaton, vice-president; W. M. Gilker, secretary and treasurer; Executive Committee, S. H. Lee, chairman, G. H. Clark, and F. B. Crosby.

Naval Architectural Society.— The third annual fall banquet of the Naval Architectural Society was held at the Technology Club, Tuesday evening, November 25. Dean Burton, Professor Swain, Professor Peabody, and Captain Hovgaard were the guests of the society; and about forty members were present.

Chemical Society.— The officers of the Chemical Society are: president, M. H. Clark, V., '03; vice-president, A. D. Smith, V., '04; secretary, W. H. Whitcomb, V., '03; treasurer, C. F. Sammet, V., '03. The elected member of the Executive Committee is F. A. Olmstead, X., '03.

RECEPTIONS AT THE TECHNOLOGY CLUB

On October 29 the Technology Club gave a reception to all college graduates attending the Institute. About two hundred and fifty were present, and were cordially welcomed by Professor Sedgwick in the absence of the club's president. Dr. Pritchett made an interesting address.

On December 11 and 19 receptions were given at the club by the Dean and Committee of Advisers, one half of the Freshman

Class being invited each time. On each occasion Dean Burton made a short speech, and supper was served. The whole club-house was thrown open freely to the students, and they availed themselves fully of the opportunity to meet their advisers and one another.

Five men accepted the invitation of the Technology Club to take their Thanksgiving dinner under its hospitable roof. This dinner was open to all students who had no other place to spend their Thanksgiving, and it is to be regretted that more of them did not avail themselves of the invitation.

ATHLETICS

Gymnasium Classes.— Regular work in the gymnasium began on Monday, Nov. 3, 1902. There are four classes, two of which meet on Mondays, Wednesdays, and Fridays, from 4.15 to 5, and from 5.05 to 5.45, respectively; the other two on Tuesdays and Thursdays, from 2.15 to 3, and from 3.15 to 4, respectively. The time between four and six o'clock on Tuesdays and Thursdays is devoted to indoor athletics and individual work.

All-round Indoor Athletic Contests.— In order to encourage a more general practice of athletics among students, there will be held in the gymnasium, on ten Tuesdays of the year, from 4.30 to 5.45, an all-round athletic contest, consisting of twelve events, the scoring to be by points and cumulative. The five men making the highest total scores will receive suitable prizes.

The class score will be the total of the six highest scores in each class, plus the results of a series of interclass relay races, the teams to be made up of the men making these six highest scores.

In this all-round contest, students who have won their T's will not be eligible. They are requested to assist in coaching, and to officiate at the contests.

Several of these contests have already been held, with good success.

The Fall Meet.— The annual fall handicap meet of the Tech Athletic Association was run off November 1 at Tufts' oval. On account of an unexpected delay in starting, only ten events were

run off, the 220-yard low hurdle, shot-put, and discus-throw being postponed.

Cross-country Race.—The annual cross-country run of the Cross-country Association was held Saturday, November 29, over the regular West Roxbury course of eight miles. It was a fine day for the run, and resulted in the best race we have had in years. There were twelve men in the race, and all finished.

The first six at the finish were as follows: —

Name.	*Class.*	*Handicap.*	*Actual Time.*
1. Thurber	'06	1 min.	49 m. 20 s.
2. Casey	'05	4 min.	52 m. 20 s.
3. Barnd	'05	6 min.	54 m. 37½ s.
4. Lorentz	'05	1 min.	49 m. 51 s.
5. Riley	'05	Scratch	49 m. 44 s.
6. Sweet	'04	Scratch	50 m. 10 s.

Tennis Association.—The fall tournament of the Tennis Association was completed November 17, when J. R. Jones and A. H. Langley won the championship in doubles from Winchester and Marsh, with the score of 6-1, 8-6, 6-1. Tech will be represented at the New England Intercollegiate Tournament, next May, by these two men.

Golf Association.— A Golf Association has been formed in the Institute, with President Pritchett and Professors Dewey, Clifford, and Bailey as honorary members. The following officers were elected: president, R. B. Williams, '03; secretary, H. A. Stiles, '03; treasurer, F. S. Krag, '06; Executive Committee, J. G. Metcalfe, '03, W. M. Van Amringe, '06, and F. H. Hubbell, '06; Captain F. A. Falvey, '05.

M. I. T. Fencing Association.— The M. I. T. Fencing Association held a meeting December 16, at which it drew up a permanent constitution and by-laws. H. M. Leh, '04, was chosen (temporary) captain, and R. O. Marsh, '05, manager for the coming year. The association is strictly a "Tech" affair, open to all students, and in no sense a private club.

Hockey Association.— At the meeting held on Friday, November 14, the following men were elected officers of the M. I. T. Hockey Association for the ensuing year: president, F. A. Falvey, '05; vice-president, W. E. Simpson, '03; secretary, T. W. Bateman, '04; treasurer and manager, P. Crowell, '05.

ADDRESSES TO STUDENTS

Two addresses to the students of the Institute have thus far been held this season. The first, by Dr. Rainsford of New York, was given on October 10. The second, by Major Henry L. Higginson, on December 19, contained, among others, the following pithy remarks: —

I suppose you all want to succeed, and I hope you will; but it depends upon what you mean by success. If you mean houses and clothes and cigars, I hope you will get a fair amount, but not too much; but, if you mean power to do things, power when a job comes along to take hold and lift it,— real power, which, if every one of you gets, he will be accountable for to himself, to the public, to his Maker,— if that is what you mean by success, I hope you will get it. I want to remind you of my conviction that a man makes his own success if he chooses. Seize every opportunity to do something and be something. There's no one that cannot be reasonably successful if he chooses. A young man said to me last year, "You will grant, anyhow, that a man's first duty is to do the best he can by himself." I said: "I will grant nothing of the kind. If you think you are of the first consequence in the world, if you think your first duty is to cover your own back and fill your own belly, you are mistaken. When you are dealing with other people, you will have to think of other people.

"Remember, you must work hard, you must seek success, you must care a great deal for it, you must be very eager for it if you want to succeed. But you mustn't be too eager. If you do, you will find that you are taking the other man's share, that you are doing a little something toward stealing. It is not so easy to remember yourself *and* the other fellow, too; but it is the thing you have got to do. . . . Don't be afraid of enthusiasm. Plenty of fellows say, 'Oh, well, what's the use?' Remember, enthusiasm isn't bosh. You will need it a great deal before you get through life. Don't let anybody laugh you out of it. Don't let anybody tell you you don't need it. . . . This is a charity school, just like Harvard University, just like all universities.

This wouldn't have existed if people hadn't put their hands in their pockets and taken out money and endowed it. The same thing is true of Harvard; and the same thing, thank God, will be true of Harvard year after year. There isn't one of you, I believe, that pays his way here, or anything like it. You pay your due bills, but you don't pay your way. Just remember afterward, that, if you have money, this is the place where it is needed. I hope you won't forget that you were a student at the Institute of Technology, that you won't forget President Pritchett. Just remember, and say to yourself, 'I am a student of the Institute of Technology,' and don't forget that you are citizens of the United States. May you be able to say when you die, 'I have tried to do my duty as a man and as a citizen of the United States.'"

GENERAL NOTES

Medical Adviser.— Dr. Franklin W. White, 416 Marlborough Street, a graduate of the Institute, has been appointed medical adviser for students, and will address them during the year on personal hygiene. He may be consulted by students any Tuesday afternoon between four and five o'clock in Room 13, Rogers, without payment of a fee.

Technology Chambers.— The Institute students residing at the Technology Chambers gave a Faculty reception Monday afternoon, November 10, from 4.30 until 6. The matrons were Mrs. Henry S. Pritchett and Mrs. Francis W. Chandler.

Cadet Hop.— The Freshmen Cadet Corps gave their annual "hop" Dec. 12. Mrs. Pritchett, Mrs. Bartlett, and Mrs. Moore were the matrons.

Captain Barry was floor director, with Captains Wetterer and Simpson as assistants.

THE GRADUATES

M. I. T. ALUMNI ASSOCIATION

The annual meeting of the Alumni Association was held Friday, December 26, at 5.30 P.M., at the Brunswick, President A. Lawrence Rotch in the chair. The report of the Executive Committee recommended that the secretary of the Alumni Association be authorized to transfer the life membership fund to the trustees of the alumni fund. It recommended also that the Executive Committee be given authority to appoint a committee of alumni to cooperate with any visiting committee of the Corporation whenever the appointment of such a committee was requested by a visiting committee of the Corporation. These recommendations were adopted.

The Association accepted and the secretary was authorized to print the following reports: Committee of the William B. Rogers Scholarship Fund, Trustees of the Alumni Fund, Financial Report of the Secretary, Advisory Council on Athletics, Committee on the School, and Walker Memorial Committee. The report of the Nominating Committee, presented in the form of a printed ballot, resulted in the election of the following officers: president, Frederick H. Newell, '85; vice-president, Walter B. Snow, '82; secretary, Arthur G. Robbins, '86; members of the Executive Committee, Azel Ames, '95, William B. Thurber, '89; member of Alumni Committee on the School, Leonard Metcalf, '92; Trustee of the Alumni Fund, James P. Munroe, '82; members of Committee on Associate Membership, George V. Wendell, '92, Charles M. Spofford, '93; member of the Advisory Council on Athletics, John L. Batchelder, Jr., '90.

The president was authorized to appoint a committee of five to consider the question of erecting a suitable memorial to the late Professor Runkle, this committee to have full power.

In accordance with a recommendation of the Association of Class Secretaries, the Executive Committee was authorized to

appoint a committee of three to consider the possibility of co-operation between the Alumni Association and the TECHNOLOGY REVIEW. The Executive Committee was authorized to appoint a nominating committee of five.

The annual dinner of the Alumni Association of the Massachusetts Institute of Technology took place at the Brunswick immediately after the annual meeting. About one hundred and fifty were present; and Mr. A. Lawrence Rotch, '84, presided. After a pleasant introduction, in which he spoke in high terms of his successor, Mr. F. H. Newell, Mr. Rotch introduced President Alexander C. Humphreys, president of the Stevens Institute of Technology. President Humphreys said in part: —

For years I have been somewhat in touch with your splendid Institute; when your first building was being erected, I was a boy in a Boston insurance office, and frequently visited a former schoolmate who lived at this end of Boylston Street. Together we watched the progress of your building. Your Professor Richards was one of my father's pupils and my schoolmate, and the admiration I had for him as a boy led me to watch with interest his rapid progress in your Institute. Then I have been associated in my engineering and business work with a number of your alumni, and my respect for your Alma Mater has been deepened through the opportunities thus afforded for judging the quality of its engineer-product. Now that I have been called to the presidency of the younger and smaller sister institution, my own Alma Mater, I am more than ever impressed with the unchallenged position you hold in the field of technical education. . . .

This is a time of inquiry and unrest; it is so in educational as in other matters. We may at such a time do well to study General Walker's "Discussions in Education." During the last few months we have had placed before us a number of notable addresses on education, many of them delivered in connection with the inauguration of certain university presidents. These addresses are nearly all of them charged with great learning and liberality of thought, and exhibit on the part of the speakers a conscientious appreciation of their grave responsibility; but in nearly all we find suggestions that technical education is almost of necessity narrowing, and that, to safeguard as far as possible against this deplorable tendency, the technical school should be under the wing of the university. On several occasions I have noticed that the portion of the audience which sits on the platform was on

the *qui vive* to welcome with enthusiastic applause these suggestions. At such times my thoughts have turned to the address on Engineering Education delivered by Professor Perry, president of the Engineering Section, at the last meeting of the British Association for the Advancement of Science. The address concludes in these words : —

" When every unit of the population is familiar with scientific ideas, our leaders will not only be more numerous, but they will be individually greater. And it is we, and not the schoolmasters, who are familiarizing the people with a better knowledge of Nature. When men can hardly take a step without seeing steam-engines and electric motors and telegraphs and telephones and steamships, with drainage and water-works, with railways and electric tramways and motor cars, when every shop window is filled with the products of engineering enterprise, it is getting rather difficult for people to have any belief in evil spirits and witchcraft. All the heart-breaking preaching of enthusiasts in education would produce very little effect upon an old society like that of England, if it were not for the engineer."

Even in the universities it is conceded that pure mathematics and pure science need not necessarily be narrowing. If study is confined to any one line, it must almost surely result in the narrowing of the student. This applies certainly as much to the study of dead languages as to the study of live science.

Why is it, then, narrowing to study applied science, where the student has to constantly test his grasp of the subject and has to reason for himself? The best we can do for any student is to teach him to do his own thinking instead of trying to stuff him with facts which will be dropped after each examination to better make room for the facts to be paraded at the next examination. If a student has a definite inclination to the study of science, and he is not deprived of that inclination by bad teaching methods, what is there more likely to make him think for himself, and think intelligently, than the practical applications of science which he must continually make during the last two years of a well-balanced course in engineering? Most emphatically, I do not stand for a course in Engineering made up alone of technical studies. The engineer has other responsibilities to meet than those connected directly with his profession; and we must do our best in the four years, to which at present we seem almost necessarily limited, to prepare him for all of his responsibilities as man, citizen, engineer, and man of business.

" Stevens " is probably as far removed from the university as it is possible to be. We have one course only; and the elective element is excluded, except for the choice permitted between French and Spanish in connection with

the fixed requirement of German. In spite of this, I venture to believe that at "Stevens" we do not need the university atmosphere; and, beautiful and alluring as that atmosphere is, many of our students are better without it. I have yet to discover that the love of learning, as compared with the desire for professional success, is confined to the university student; though I do believe there are many who are led to study by the purpose to achieve professional success, and later learn to love study for itself. This evolution of motive, thank God, helps in many other directions to the improvement of character and to the curbing of the powers of evil.

I admit that there has been and is yet occasion for criticism of some of the methods of technical schools: it would be marvellous otherwise. But may we not fairly claim that the weaknesses in engineering education have been at least as apparent in the case of the universities as in the case of the separate schools? May we not go farther, and claim that there is the greatest likelihood of covering the necessary technical studies and the best of non-technical studies by setting before the student a prescribed, co-ordinated course, in which theory and practice are harmonized, lectures relied upon more to excite the interest of the student and induce him to study and work in the shops and laboratories than for the presentation of facts, and all under the direction of a single Faculty working to a common end? Such a course can only be developed through the combined efforts of broad-minded, experienced educators and successful practitioners of like breadth of view. . . .

After graduation the young engineer will be influenced by commercial conditions, and possibly by his own natural bent, to become a specialist. To-day the field is so wide and the requirements are so exacting that no man can expect to excel unless he confines himself within certain rather narrow limits. But this does not imply that he need be a narrow man. As your General Walker has said, "A man may be liberal and broad in spirit and yet exact and strong in his thinking."

When we come to consider carefully the introduction into the course of new and additional matter which from time to time seems necessary, it will often be found that the new requirement resolves itself into the advisability of substituting new applications of the same old fundamental laws. So the course, while modified to new requirements, more or less urgent, is not necessarily weakened in any direction nor rendered more burdensome. In the case of electricity the requirements have been of late years greatly increased, even for a course in general engineering; and it has been found necessary to add to the curriculum without being always able to find a full equivalent for elimination. In such cases the temptation is strong to encroach upon the

time allotted to the non-technical studies. This should be firmly resisted. Rather the tendency should be the other way. At "Stevens" we are readjusting our curriculum to give, among other things, more time to English.

For a few years we have been giving some combined lectures and recitations on business methods. I believe that it is of the utmost importance that the young engineer should be at least brought to appreciate that his work as an engineer will surely be limited by commercial conditions. He should have a knowledge of at least the fundamentals of accounting if he is to be able to exercise a close and intelligent supervision of manufacturing cost. In my own experience as an employer of technically trained engineers, I have often had to regret my inability to promote some one thoroughly competent as an engineer and worthy as a man because he was not competent as a man of business. . . .

Finally, while acknowledging that some of the manufacturers and business men of the United States are coming to have a lively appreciation of the practical worth of technical training, I wish to urge the importance of a still more general recognition of this truth, and to express the hope that the men who have so directly benefited by employing technically trained assistants may be found more ready to acknowledge their obligations and responsibilities, and thus be willing to devote part of their increased earnings to the further perfecting and spreading of this great agency for good.

The next speaker introduced by Mr. Rotch, "to emphasize the cordial relations existing between the Lawrence Scientific School and the Institute of Technology," was Dean Shaler of the former institution. Professor Shaler said in part: —

Gentlemen of the Alumni, — May I say brethren? I am glad to look into your faces and take some of your counsels. I have been interested in what the distinguished president of Stevens Institute has told you concerning various observations of various learned men as to the place and the training of the engineer. I agree with most of their observations, but I have my doubts about their conclusions. The tendency to observe in this world is very dangerous, if it is not well controlled. I remember in my boy days in Cambridge, now getting to be near half a century ago,— I remember a dear "galoot," who was an intimate of mine, although he was a student in the divinity class, who was addicted to observing. He would come into my room frequently at night with a weary look, and say, "Shaler, I've observed so and so, and so and so." The observations were good, but

they came to nothing. The last time I saw the dear fellow was on the field of the second Bull Run. He was there as an attendant to the wounded. He was there to good purpose, for he was blood and mire from his head to his feet; but his observant methods had not failed him. I said, "I am glad to see you here, and to see you have been so well employed." He replied, "Shaler, I have observed a very curious thing: 85 per cent. of the wounded are hit in the arms or legs, and I cannot make out what it means." The poor boy might have lived to his dying day — but he died shortly after in his good work — without knowing that the remainder were dead. That accounted for the extraordinary preponderance who were hit in the arms or legs.

Now, in dealing with this whole question of education, we run the same risks of misusing our observations. I think that is a part of the perplexity we are in concerning the relations between technical schools and universities. I have watched that situation for a good many years. There are certain distinct advantages arising from the connection of technical schools with universities, and certain definite disadvantages. You have got to weigh them both. You must see the whole situation. . . .

It is a question largely dependent on the person's temperament whether he will do best in this place or that. We have to remember this diversity in men. I ask if you remember that computation has shown, among the men who take mathematics in the University of Cambridge, that between the best men and the senior wrangler there is a scale of four hundred units in capacity. There is this enormous diversity; and the question whether a man is best here or is best there is an almost insoluble question, and only to be determined by the experience of the man himself. A man may teach, as I have, for nearly forty years, and he may have, as I am told I have had, about half of those who have graduated from Harvard as students: he may know them relatively well; but no man can look through the veil which covers his neighbor to see just what is best for him. The only thing he can do is to give the man the best opportunities, and a chance to take that which his soul desires. I believe in having the opportunities in your school the largest possible, for I believe that large culture makes for largeness. And nowhere largeness is so needed as in men of your class, who are really to shape the world in time to come, who are shaping it now.

That brings me to my point. I very much desire to see close-working sympathy between your institution and that which we have in Cambridge. I wish to see in this field the fullest opportunity for youths to get all that can be had out of the public money which goes to the support of the two institu-

tions. If we have a man who can serve you, he shall, so far as I am able to influence him, serve you. I am glad to come here for that service myself. I have never welcomed any bidding as much as the one which calls me across the river on Monday week in the Institute of Technology. If you have a man who can help our men, I want him to help them ; and in that way we will build up, I think, an institution worthy of the public support which we both have had, worthy of the devotion to the cause of education which is characteristic of this community. Let the rest take care of itself. Let us each put our resources at the disposal of the other, and give such help as is needed.

It is a question what is going to be the future of these broad United States. I believe there is not the economic future before us that there has been in the century that has just passed. The centre of industrial power is to go elsewhere than New England ; but there are certain reasons why New England, if it conserves its resources and brings all its powers to one purpose, may be the great educational centre of the Atlantic system. It has an admirable climate, fitting for high endeavor. It has, moreover, the very first condition, the most difficult condition to be obtained,— the condition of perfect freedom of endeavor. There is a singularly magnanimous, large toleration in this New England country. I speak it as one not belonging to this civilization, but coming from the Virginian group. This is shown in many ways, perhaps conspicuously by the fact that, of the three technical schools in Massachusetts, all are under the control of Southern men at the present time. Moreover, the chief of our engineering work, Professor Hollis, is a Kentuckian : the secretary of our school is a North Carolinian ; and that has been going on through this community as long as I have known it. One thing that touched me to note was that in '62, in the midst of the great debate between the North and the South, the position of astronomer in the university became vacant ; and there was naturally a deep interest as to who should have it. It fell to a certain Joseph Winlock, a Confederate sympathizer, who was elected, chosen by the corporation, and approved by the board, without a dissenting vote, though known to all that he was a Confederate sympathizer. That satisfied me that we had the foundation of all large education,— a broad-minded and magnanimous spirit. If we gentlemen link our hands,— I don't say link our persons,— if we link our hearts and hands in this work, we can make it very great ; and it is for that I rejoice in the work Pritchett is doing here. I have felt great sympathy in all these propositions that we help one another, and let the rest take care of itself.

President Pritchett, introduced as "needing no introduction," was greeted with the Institute cheer. His address was substantially as follows: —

We welcome Professor Shaler here, as we welcome all Harvard men as brothers. We are glad to join hands with them in the common work of education and industrial advancement, which will not only make New England great and prosperous, but will help to bond New England with that great mass of our fellow-countrymen who live outside of New England. I am glad that we have heard the words of our other guest. There ought to be a fellowship between technical schools no less than a fellowship between our institutions at home; and right gladly we welcome the president of our sister institution, Stevens Institute.

As I listened to the remarks which he made concerning the duty of rich men to our institutions of learning, I could hardly understand how a man of large means could keep money in his pocket when he thought about the Institute of Technology; and yet somehow or other they manage to do it.

I am going to tell you the story of what we are doing, the changes and difficulties of the last year, and, I hope, some of the advances we are making. There have been some changes in the Institute which have been far-reaching, and perhaps none is more so than the change in the administrative arrangements. . . .

Some changes, however, have not been in the direction of adding men. Last year one who has served us well found it necessary to give up the active direction of his department,— Professor Niles. He has been with you for years, and many of you know him and love him. He remains with us still as emeritus professor, giving us of his mind and instruction; and for that we are glad.

There is one other man whom you all know who has left us to return no more. As I have made journeys about the country,— to Cincinnati, to Chicago, to Buffalo, or where not,— Technology men, when they have gathered together, have always asked about this man or that man; but for one man there was always an affectionate inquiry which, I think, was different from that made in regard to anybody else. All the old men wanted to know about Johnny Runkle: they all call him Johnny Runkle. He has left us during this year; but he has left with us such a memory of sweetness and such a memory of an unselfish and devoted life that not only to all the classes that have gone before, but to all the classes that will come after, there will rise up the fragrance of a noble, wise, and unselfish life.

When I last spoke to you, we had planned a building of a rather ambitious sort to house the department of Physics and Electrical Engineering. Since that time the departments of Physics and Electrical Engineering have been separated into two; and it has been found wise to build what may be called a temporary shelter for the department of Electrical Engineering alone. The money for the building has been in a large measure subscribed by the generosity of the members of our own Corporation, by the family of the late Mr. Lowell; and there has been built, as you know, on Trinity Place land an electrical engineering laboratory. This is in many respects the most complete and ambitious in the country. All the machinery and apparatus ordered for it are not here, and will not be for some time to come. But there will be found in this laboratory, when it is completely furnished, what is to be, I believe, the best opportunity which will be had in this country for the particular study of applied electricity; and in this fact and in these new acquisitions I think you may find comfort and confidence in the work of the Institute and in its future. Along with that new division of our work and this new building we have installed, as the head of the department, an engineer of reputation, a man who comes to us from the Johns Hopkins and a large practice in New York,— Dr. Duncan. I am sure you will welcome him to our ranks as a man destined not only to lead our own work and direct it into new channels, but who also is one who will have strong personal influence with students and those who work under him.

Two years ago, when I last met with you in this way, we were engaged in raising the money for the Walker Memorial Building. Possibly some of you may remember the efforts which were being made at that time. I am glad, as I look back upon it, to feel that we were very successful in that effort. One hundred thousand dollars is not a small sum for an institution to raise among its own alumni, and that sum has been supplemented by the further sum of between forty and fifty thousand dollars by other friends of the institution. We have now available for that building a sufficient sum to erect a building suitable for the purpose, and one which will be a credit to us and to the institution, and a suitable memorial for General Walker. The erection of such a building has been delayed, owing to complications of other questions which have arisen, and to which I shall in a moment allude.

Pending that building we have made some provision for the social wants of the students, which in a way forms a preliminary step to the paths and pleasures of social enjoyment of the Walker Building when it may come. All of you know that I have, that most of us have, a great desire to bring

about the opportunity for our men to rub together in a wholesome, simple, and straightforward way; and there has been fitted up over the machine-shops some rooms which are at the disposal of the student body. We have had made a room where one hundred and fifty men may come together. There is a small ante-room. Along with it is a good kitchen where men may get a better meal for twenty-five cents than anywhere else for seventy-five cents or a dollar. This means that our fellows can come together in a wholesome and inexpensive way, and in a place which is their own.

There are two other questions before the Institute at this time, to which I will allude briefly. One is the establishment of a graduate school of engineering research. The Institute has always aimed at the extension of its work to the highest possible point. It has always intended to present at some time or another the opportunity for original research. With the building of the Lowell laboratories and with the addition to the other laboratories which now belong to the institution, the time seems fit for inaugurating such a department; and so we are beginning next year a graduate school of engineering research, in which the effort will be made to bring together a small number of men, men chosen by reason of their ability to carry on research, and give to them the opportunity to undertake research along engineering lines. I can but feel myself that this means for us a great step. It means not only an advance beyond a great undergraduate school, but also a distinct effort to direct engineering intellectual effort towards the solution of those engineering investigations which have just as much attraction as those of pure science, which have also for their end those things which tend to the upbuilding of the race. There is, to my mind, no reason why a problem in applied science may not have just as great attraction, just as great value, and just as great beauty as a problem in abstract science; and I shall be greatly disappointed if, out of the men we gather, there may not be some who will extend our knowledge and solve some of the problems, and may add greatly to the pleasure, to the virtue, and to the ability for enjoyment of human life.

Let me, in closing, say just a word about one other great problem which confronts those who are now trying as best they may to direct the work and course of the Institute; and that is the problem brought about by the great growth of our numbers. In three years the Institute has grown from a school of a few hundred students to one of over one thousand six hundred. No one can tell how long or how regularly such growth will continue, but under normal conditions there is no reason to doubt that the school will have a fairly regular growth. This may be limited and interfered with. It may have its fluctuations with the fluctuations of business, but, after all, the life

of a school is measured by centuries and thousands of years; and, as one looks into the future five or ten years, or fifty or a hundred, it is evident that, if such growth is to continue, there must be some means provided by which the increased growth may receive increased attention, by which added numbers may not by their weight bear down the character of the instruction, and by which the institution may be so allowed to care for its work as to give to all who may come the facilities it would give, were the school much smaller. And so, as the Institute stands to-day, realizing as it does that in the crowded centre of the city it has but a few thousand square feet of land left at its disposal, the time seems to have come when we who love it and work in it, and our alumni and graduates, must decide,— because this question is your question quite as much as it is my question, and that of the Corporation, — the time seems to have come when we ought to decide whether there should be placed an arbitrary limit upon the growth of the Institute, or whether we shall face the problem and find out a place in which it can grow properly. Personally, I doubt whether the institution may be arbitrarily limited in numbers with good results. It is quite fair to impose upon any institution the limitation which comes when you impose a strict scrutiny of the entering students; but I question seriously whether the institution may be arbitrarily limited in other ways. At all events, so far as the question presents itself to me, I am willing to say, myself, frankly that the time seems to have come when we may well, if we can dispose of the land which the Institute now uses, remove not too far to be still in touch with the industrial life of the city, still accessible to depots and street-cars, but where we may have opportunity to grow and develop in accordance with the needs and growth which we may naturally expect. Some of you may have seen, doubtless all of you have seen, in the Review a statement of this kind, and its discussion. In the July number there were stated clearly the arguments for and against such a proposition. You have been asked to give your own expression of opinion about it; and I hope you will do so frankly and freely, because it is a problem which means much to you, and it means a great deal to our institution. Apart from all other reasons for such a move, even if there were an effectual method of dealing with the overcrowded condition of our present location, there is one argument which, to my mind, means a great deal. That is this. I should like to see the Institute placed where the buildings themselves, where the architecture of the buildings, the ordering of the buildings, and the carrying out of the life and work of the Institute should represent the things for which we stand. We stand in the Institute for a high conception of architecture. We teach, and I believe we teach well, sanitary

engineering, and we even have a course in ventilation; but it is very difficult to live up to these ideals in the situation in which we now stand. To my thinking, no institution does its best work and stands in the most direct way for its own ideals until it can carry out formally in its life and conduct the principles which it itself undertakes to practise.

And so, in closing this somewhat desultory talk of the work of the year, I am willing to say frankly, for my own part, that, if the ways can be found and the donors to whom our friend, the president of Stevens, has so generously alluded, can be discovered, the time has now come when we may seek a larger field, and when we may build buildings suited for our wants, and conduct a student life which shall have more in it of social contact, and more in it of simple, economic living, and when we may build up about these buildings those other buildings which may lend themselves to such living and realization of the ideals to which the Institute itself devotes its life. If I myself could foresee the uses to which money could be put, it seems to me that there could be no nobler gift, no wider opportunity to any man interested in education, interested in young men, than that which is presented in an institution which brings together from all parts of our own country, and from many countries abroad, young men to find here their preparation for life, and to find here not only opportunity for technical training, but opportunity for ingraining into themselves new, splendid, and high ideals of social living, high ideals of their relations to each other, and high ideals of their relations as citizens.

THE WASHINGTON SOCIETY OF THE M. I. T.

The Washington Society of the Massachusetts Institute of Technology has now completed the fourth year of its existence, and it is very gratifying to be able to state that at no time has it been in a more prosperous condition. During the past year several members have left this vicinity to accept positions elsewhere; and, while we regret that we cannot keep them with us, we are glad to say that more "Tech" men have come to Washington, and the membership of the society is gradually increasing.

During the year several informal meetings have been held for the purpose of bringing the members together socially, and thus keeping alive an active interest in the society. At these meetings it is the custom first to bring up for discussion what matters of

business there may be, and then to devote the remainder of the time to some sort of entertainment. This has consisted chiefly of talks on subjects not only of national importance, but also of scientific interest. One subject which proved to be particularly interesting was "The Isthmian Canal," in which Mr. C. H. Davis, chief hydrographer of the Isthmian Canal Commission, having been over the several proposed routes and having closely observed the nature of the surroundings, was able to present, in a comprehensive way, their advantages and disadvantages. At another time, Mr. F. H. Newell, chief hydrographer of the Geological Survey, gave a talk on "Irrigation," in which he showed how it is possible to make fertile, and therefore of value, land which, on account of the great lack of moisture in the dry seasons, is almost worthless. This can be done by storing up, during the rainy seasons, water which now runs to waste through the various water-ways, and carefully distributing it, when needed, through canals leading to land lying even at long distances from the reservoir. This is being done at the present time by many land-holders in the West; but it is surprising to learn what vast tracts of land may be made of value, and thus what great resources are now lying within the grasp of the government.

Besides meetings such as the above which are instructive as well as interesting, others have been held which are more of a social nature and which are quite as enjoyable.

In the early part of the year a publication committee was appointed for the purpose of furnishing information to alumni and undergraduates of the "Tech" regarding the work in the various scientific departments of the government. Already several articles have been published in the TECHNOLOGY REVIEW, and in these an effort has been made to show not so much the opportunities offered to men having a scientific education as the advantages to a government and the absolute need of the services of the ablest of such men.

Another subject in which the society has taken much interest is "The Closer Affiliation of the Various Branch Alumni Societies with the Parent Society in Boston." Very little action has thus far

been taken, as it has seemed best to await the action of the committee appointed by the parent alumni association to take the matter in hand. In general, the various propositions thus far presented have met with approval; and it seems to be the feeling of all that this society should make every effort to bring about the closer affiliation proposed.

WINTHROP COLE, '87, *Sec'y.*

THE M. I. T. SOCIETY OF NEW YORK

The New York organization, heretofore known as the M. I. T. Society of New York, is about to be incorporated as The Technology Club of New York, to comply with the requirements of the Committee on Affiliation. It now consists of one hundred and twenty members, but it is expected this number will greatly increase in the next few weeks by an effort being made to replace the non-residents who will now join the other affiliated societies. The dues are but $5 a year, which includes the dues to the Alumni Association and a subscription to the TECHNOLOGY REVIEW.

The society holds monthly meetings. The annual meeting on the first Saturday in February is held at one of the larger clubs, last year at the University Club, and the previous at the Art Club. On the first Saturdays of July, August, and September, excursions are made to one of the numerous beaches around New York City, and to which the lady friends of the members are welcome. On the other months, meetings are held on the 10th. The November meeting consisted of a seventy-five cent *table d'hote* dinner at the Casino on 124th Street, after which the party went into the tunnel now being driven under the northern portion of Central Park for the proposed Rapid Transit, under the guidance of G. A. Taber, '94, engineer in charge of this portion. The meetings are quite well attended, there being from thirty to seventy present, depending on the inducements offered.

We expect in the fall to open a club-house, the lower floors of which will be used for club purposes, and the upper floors reserved for the accommodation of about twenty members.

ALEX. RICE MCKIM, '85, *Sec'y.*

THE M. I. T. CLUB OF CINCINNATI.

During the summer the club had a very pleasant outdoor meeting at a summer resort in the Kentucky Highlands, across the river. There were about fifteen present; but this had one advantage, in that the members all became better acquainted, and did not crowd the bowling alleys, which were occupied after supper.

Another meeting had been planned for September; but, as the president and secretary were both away, the time went by without our getting together, and it is probable that the next meeting will not be until the annual dinner in February.

The club has just made a start in this direction, but those who have come together already begin to realize the advantages of such an association; and, no doubt, the Club will grow in interest as well as in numbers. There are about thirty-two in the vicinity who are allied more or less closely with the local club.

CHARLES G. MERRELL, '88, *Sec'y.*

ASSOCIATION OF CLASS SECRETARIES OF THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

The sixth annual meeting of the Association was held at the Technology Club on Monday evening, Nov. 17, 1902. The meeting was called to order at 8 P.M., Professor C. Frank Allen being chosen chairman.

The secretary, Mr. W. B. Snow, having declined re-election, the Nominating Committee (Messrs. Metcalf, Thomas, and Prescott) reported the names of Frederic H. Fay for secretary and Charles F. Read for assistant secretary; and these officers were elected for the ensuing two years.

The reports of the secretary were read and accepted. The financial statement was as follows: —

RECEIPTS

Balance on hand Oct 31, 1901.	$160.11
Assessments and interest	7.97
	$168.08

EXPENDITURES

Printing and postage	24.75
Balance Nov. 17, 1902	$143.33

Mr. Spofford, as chairman of the committee appointed to report upon the improvement of undergraduate organization, made the following recommendations to the Association: —

1st. That secretaries of the undergraduate classes be made Associate Members of this Association.

2d. That the Institute Committee be requested to take each year whatever action may be necessary to insure, as far as possible, the election of suitable undergraduate class secretaries.

3d. That this Association provide catalogue cases for each of the four Institute classes, and supply each class now at the Institute and all future classes with standard catalogue cards.

4th. That the Institute officials be requested to provide a suitable repository for these class catalogues.

5th. That a member of this Association be delegated each year to advise the secretary of the Freshman Class upon the question of preparing a class catalogue.

Assistant Secretary Read, as chairman, presented the report of the committee on closer relations among the graduate organizations; and the report was accepted as a report of progress.

It was voted "that this Association suggest to the Alumni Association the desirability of the appointment of a committee to consider the possibility of co-operation between the Alumni Association and the TECHNOLOGY REVIEW."

Votes of thanks were given Mr. Munroe for his services as managing editor of the REVIEW; and to the retiring secretary, Mr. Snow, to whose efficient and untiring labor has been due, in great measure, the success of this Association from its formation to the present time.

The report of the Publication Committee of the TECHNOLOGY REVIEW, of which the following is an abstract, was presented by Mr. Munroe, and duly accepted: —

At the end of this, its fourth year, the REVIEW is financially able to stand

alone, having discharged all its debts without drawing upon any of the funds belonging to 1903, and without seeking the assistance of the Institute of Technology. Such aid had been given to Volumes II. and III., taking the form of three hundred subscriptions for copies to be sent mainly to preparatory schools, colleges, and libraries. During the past year these copies have been sent as heretofore; but this has been done at the expense of the REVIEW, and not at that of the Institute. At the present time the REVIEW distributes, for the benefit of the Institute, 361 free copies. While it is not possible to measure the good resulting therefrom, it is believed that these copies are thoroughly and widely read by the many young men, their teachers and other elders, to whom the Institute is thus in this dignified way presented.

As to the effect of the magazine upon former students, the Publication Committee believes that it has accomplished even more than was anticipated. Established for the purpose of bringing about a better knowledge of the Institute and of arousing a deeper interest among past students, it is felt that to the REVIEW is due, in no small measure, the marked increase in college spirit which has grown up among these men during the last four years.

That the field of the REVIEW is enlarging is shown by a considerable increase from 1901, both in total circulation and in paid subscriptions. In this connection it is gratifying to note that not only does the REVIEW gain each year a good proportion of new subscribers, but it retains a very large percentage of its old subscribers also. Of those who subscribed to Volumes II. and III., more than 87 per cent. in each case renewed their subscriptions to Volumes III. and IV. Considering that, in general, magazines of this character carry over from one year to the next only about two-thirds of their subscription list, we have, in the case of the REVIEW, striking evidence of the success of the magazine in retaining the interest of Institute men.

The number of pages of reading matter in Volume IV. is 530, considerably more than in Volumes II. and III., and even exceeding the phenomenally large Volume I., whose size it was not expected ever again to duplicate.

The cost of the volume just completed was, in round numbers, $2,900. This total outlay was provided for by subscriptions and sales amounting to $1,300, and by advertising amounting to over $1,600. This Volume IV., then, may be regarded as the standard for the future; and the committee sees no reason why, if the REVIEW is kept at its present level of interest, this should not be the normal income. The subscriptions will tend to increase rather than to fall off; and the advertising is on so sound a basis that there seems no reason to anticipate any marked diminution in the income from that source. Therefore, deeply grateful as we are for the assistance given during

two years by the Institute, it is hoped that this aid will not have to be invoked in the future any more than it has been in the present year.

F. H. FAY, '93, *Sec'y.*

THE ASSOCIATION OF THE WOMEN OF THE M. I. T.

The third annual meeting of the Association of the Women of the Massachusetts Institute of Technology was held at the Margaret Cheney Room on Saturday, Dec. 27, 1902. About thirty members were present, who had the honor of entertaining as guests Mrs. Edwin D. Mead, Miss Susan Minns, and Countess Salazar. Letters were read from Mrs. Ednah D. Cheney and President Pritchett, both of whom had expected to be present. The meeting was called to order by the vice-president, Mrs. Charles Sawyer, Mrs. Ellen H. Richards, the president, being unable to attend. At the business meeting, reports were submitted by the secretary, the treasurer, the historian, and by the Committee on Registration. The affairs of the association appear to be in good condition. The following officers and committees were elected: Executive Committee,— president, Mrs. Ellen H. Richards, '73; first vice-president, Miss C. Belle Kenney, '86; corresponding secretary, Miss M. A. Fraser; treasurer, Miss Lillian G. Currier; and Miss Ethel P. Rathbun, Miss Laura B. White, Miss Alice Burr. Nomination Committee,— Miss Beulah C. Hill, '02; Miss Bertha M. Brown, '92; Miss Clara I. Durgin, '00. Registration Committee,— for one year, Miss Llora R. Culver, '02; for two years, Miss Anna Gallup, '01; for three years, Miss Annetta F. Armes; for four years, Miss Grace Lanford, '00; for five years, Miss Nettie O. Willey.

Dr. Mary E. Jones, president of the Women's Physiological Institute, then gave a short account of her experiences as a student in medical schools in Italy, contrasting the opportunities of women students there and in America at that time. She introduced as a speaker Countess Salazar of Rome, who has spent many years in the work of securing greater advantages for the women of her country who desire higher education.

Luncheon followed; and after this very interesting addresses

were made by Mr. James P. Munroe, Mrs. Mead, and Miss Minns, who spoke of certain features of modern education. Mr. Munroe pointed out the serious lack of ethical training in the schools, and the tendency of modern education to develop erudition rather than strength of character, but suggested as a remedy better teachers and smaller classes. Mrs. Mead's subject was the decrease of democracy and increase of militarism in most modern nations. She advocated emphasizing peace and the value of arbitration wherever possible, and was very hopeful of the results of the Hague Conference and of the possibilities of an international tribunal at no distant date. Miss Minns described her experiences in Cuba during the time that the United States military government was establishing a department of charities there to care for hospitals, homes for children and others, schools, etc. The work of the board was also to teach the people to manage these matters for themselves, and by degrees the different departments were turned over to municipal control. She told how these affairs, so foreign to military routine, were most successfully worked out.

The work of the association during the past year has been largely in the direction of increasing social intercourse between its members and between former and present women students at the Institute. To this end a series of social afternoons were arranged during the winter, at which interesting programmes were presented. The women students at the Institute were cordially invited, and the meetings proved so successful that it was voted to continue them the present winter. The historian has read and sorted a large collection of papers concerning the early history of the connection of women students with the Institute, and a connected account has been made and typewritten. This includes the story of the establishing and furnishing of the Margaret Cheney Room. The Committee of Registration has been collecting all possible information of interest concerning former women students, and preparing a card catalogue. The association has the interests of the present women students much at heart, the special concern at present being to arrange for some kind of physical training for them.

MARGARET E. DODD, '92, *Sec'y.*

THE TECHNOLOGY CLUB

At the annual meeting of the Technology Club for the year 1902–3, held on Tuesday evening, Oct. 14, 1902, the following officers were elected: James Phinney Munroe, '82, president; Francis Henry Williams, '73, vice-president; Walter Humphreys, '97, secretary; Andrew Daniel Fuller, '95, treasurer; Albert Farwell Bemis, '93, Frank Lovering Locke, '86, Edwin Child Miller, '79, Montgomery Rollins, '89, Edward Galbraith Thomas, '87, for the Council for three years; and George Vincent Wendell, '92, for the Council for two years.

The seventh season was opened by a smoke-talk given by President Pritchett, on the "Work of a Bureau Chief in the United States Government." On the second evening (to members and ladies) Professor William H. Niles gave a talk on "Holland and its People." On the third evening, William Ralph Emerson gave a smoke-talk, illustrated, on "How an Old Draughtsman uses his Imagination." A sketch made in twenty-five minutes was framed and given to the club. On the fourth evening, Mr. William Lyman Underwood gave a talk on "Mosquitoes," illustrated with the stereopticon by photographs taken from life by the lecturer. On the fifth evening, and a ladies' night, Mr. C. Howard Walker gave an illustrated talk on "The Campanile at Venice." On the sixth evening, Saturday, December 13, President Jacob Gould Schurman, of Cornell University, talked to the club members on the "Philippine Question." On January 6, Dr. Benjamin Sharp, of the Philadelphia Academy of Natural Sciences, entertained the members with a talk, illustrated by many stereopticon pictures, on a "Summer in Alaska and Siberia." The attendance at these talks has been large, as usual. The speakers have been most cordially received by the members, and great interest has been shown. After each of these talks, excepting the last, light refreshments have been served. The Executive Committee regrets exceedingly that it has been obliged to suspend temporarily the lunch which has usually followed the smoke-talks; but the great increase in the cost of provisions and fuel has made it impossible for the club income to keep pace with

the expenses. Rather than increase the price of lunch and dinner, it has been thought to be more advisable to omit these "smoke-talk" lunches. Lunches will, however, be served on ladies' nights; and, as soon as prices become normal, they will be resumed on "smoke-talk" evenings.

The use of the rooms made available for the students of the Institute and undergraduate societies by President Pritchett in the quarters formerly used by the Lowell School of Design, over the Mechanical Laboratories, has lessened the demand for the common room of the club. The Executive Committee, at the beginning of the year, believed it inadvisable to give the use of this room to Institute societies, as the evening attendance at the club has increased greatly, and the use of the common room by other societies has grown to be an inconvenience to club members. The dining-room has, however, been used by these allied societies and for class suppers. One of the most interesting ones was that of the classes of '68, '69, and '70, when twenty-three members of these classes met and dined at the club. The privileges of the club were recently extended to the class of '92, when it held its decennial.

Through the kindness of Mr. Charles L. Adams, Instructor in Free-hand Drawing at the Institute, more pictures have recently been hung in the common room. With his help the House Committee has been able to make the common room more attractive and more homelike.

WALTER HUMPHREYS, '97, *Sec'y.*

NEWS FROM THE CLASSES

1872.

PROF. C. FRANK ALLEN, *Sec.*, Mass. Inst. of Technology, Boston.

Charles S. Minot has recently received the degree of D.Sc. (Doctor of Science) from Oxford. This was conferred on the occasion of the Celebration of the Tercentenary of the Bodleian Library, at which Dr. Minot was present as senior delegate from Harvard University. Minot's position in the scientific world makes this honorary degree exceptionally appropriate. The degree is a new one, having been first conferred three years ago, being used instead of D.C.L. (Doctor of Civil Law), which is now restricted to a narrower field, largely of political life. On the occasion referred to above, Minot was the only one to receive this new degree. It has been granted to very few Americans, perhaps to only one other.— Mr. R. H. Soule is likely soon to find his health so re-established that he can again resume active work. He has been critically ill for a long time, and has been obliged to give up all business in pursuit of health. It is believed that within a very few months he will again take up his consulting engineering practice in New York City.

1874.

CHARLES F. READ, *Sec.*, Old State House, Boston, Mass.

The regular quarterly lunch of the Association occurred on October 8 at "Marliave's," and was attended by a goodly number of members.— Mr. James P. Safford, a member of the Class Association, died at Port Jarvis, N.J., on Sept. 20, 1902.— Edward R. Hamilton is "prospecting" in California.

1875.

E. A. W. HAMMATT, *Sec.*, 1 Neponset Block, Hyde Park, Mass.

It was stated in the October number that the address of Horace E. Stower was 65 Oak Square Avenue, Brighton. The name

should have been Horace E. Stowe.— E. A. W. Hammatt has consolidated his Boston and Hyde Park office, and his address is now Hyde Park, Mass.— "Notes of the Development of Butte" was the title of an interesting paper read before the Mining Congress at Butte on Friday, Aug. 5, 1902, by C. W. Goodall, assistant manager of the Boston and Montana Company.

1877.

RICHARD A. HALE, *Sec.*, Lawrence, Mass.

Herbert S. Jaques, a prominent and active member of the Country Club at Brookline, had the misfortune, during a team match with a Montreal Golf Club team, to receive a blow in the left eye from a golf ball driven with terrific speed by one of the Montreal golfers. The sight of the eye was destroyed, but we are glad to learn that the sight of the other eye is uninjured, and that he is now able to be in town. Jaques was an active member of the Country Club Committee, and he has the deepest sympathy from his friends and classmates for this deplorable accident.— Joseph P. Gray, vice-president of Boston Manufacturers' Insurance Company, has recently been to Chicago to make an address to one of the Citizen Associations relating to fire protection in large cities.— George W. Kittredge, chief engineer of the "Big Four" Railway, has been very busy in relocating portions of the line with reference to easier curves and grades.

1880.

PROF. GEORGE H. BARTON, *Sec.*, Mass. Inst. of Technology, Boston, Mass.

The following is from the *Commercial Chronicle* of September 17, 1902: —

Beyond a question of a doubt one of the oldest and best known construction concerns in Chicago is the Jonathan Clark & Sons Company, the business of which was established by Jonathan Clark in 1852. . . . The announcement is made that this well-known concern is to be succeeded by the Clark Construction Company, which has just been incorporated under the laws of

New Jersey, with a capital stock of $1,250,000, or ten times the capital on which the original company operated.

This extraordinary move is due to the fact that New York and the Eastern field are to be invaded by the Clark people, who recognize an excellent opportunity to do some fine business in competition with the Fuller and other large building concerns. An office has been opened in New York at No. 50 Broadway, and a specialty will be made of work that requires quick construction. The capital stock of the new Clark Construction Company is divided into $250,000 6 per cent. preferred and $1,000,000 of common. The officers of the new corporation are: president, F. W. Clark (M. I. T. '80); vice-president, Hugo R. Johnstone; secretary, George T. Clark; treasurer, S. W. Allerton; general counsel, William D. Washburn, all of whom are Chicago men. It is understood that the New York office will be under the direct supervision of Vice-President H. R. Johnstone.

That the Clark Construction Company is able to successfully compete with any building concern in the United States to-day is shown in the fact that the Jonathan Clark & Sons Company has built many of the finest buildings in this country, the most notable being the Art Institute, the Lewis Institute, and the Journal Building in Chicago; the Ellicott Square Building in Buffalo; the Park Building, Pittsburg; Niagara Building and Bradley Institute, Peoria; the Century Building, St. Louis; and the Albany Savings Bank and Hotel Ten Eyck, Albany, N.Y. A general contracting business apart from building work has always been done by the old concern, and will be continued by the new company.

1881.

FRANK E. CAME, *Sec.*, 17 Place d'Armes Hill, Montreal, P.Q., Can.

The following clipping is taken from a New Bedford paper of Nov. 29, 1902: —

Frederick J. Sawyer, youngest son of the late Jonathan and Martha P. Sawyer, died at his home in New Bedford, Mass., the 28th inst. He was born in this city May 27, 1859. He was educated in the public schools of Dover, Phillips Exeter Academy, and the Massachusetts Institute of Technology; was one of the firm of Sawyer and Blake, electrical engineers, Boston, until his health failed, when the firm was dissolved. He has of late years resided in New Bedford, Mass. Mr. Sawyer married Miss Isabel Dootson, of New Bedford, who died Dec. 29, 1898. He is survived by

two sons, Frederick Roswell and Gordon Blake Sawyer; also by a brother, ex-Governor Charles H. Sawyer, and two sisters, Mrs. W. S. Bradley, of this city, and Mrs F. W. Payne, of Chestnut Hill, Mass.

1882.

WALTER B. SNOW, *Sec.*, Watertown, Mass.

A recent issue of the New York *Sun* contains an interesting account of the new cathedral of St. John the Divine on Morningside Heights: —

No one [says the writer], not even the architects, George L. Heins and C. Grant La Farge, who know more about the big cathedral than any other persons, has even attempted to make a rough estimate of the amount of stone and bricks and other material and the quantity of decoration that the building will demand. "All we know," said Mr. La Farge recently, "is that the amount will be great,— great almost to the point of incomprehensibility. Each day we find our task grows larger; each day we are astounded by its continually magnified proportions. When will the cathedral be completed? When will the world come to an end? Conjecture — conjecture. We are arranging the drawings so that the architects, whoever they may be, who succeed us when we are dead, will be able to understand them clearly, and take up the work without a hitch where we left off. And we are not old men by any means!" . . . The striking portion of the cathedral above ground is one of the four great arches that will ultimately support the great central tower. Those arches are to rest on four pillars that rise to a height of over one hundred feet. Each pillar is to bear a weight of thirty-seven million pounds, four times which, or 148,000,000 pounds, will be the tower's weight. . . . It came to a point one day with the architects where it was imperative that the stone to be used in the cathedral should be decided upon. Messrs. Heins and La Farge wanted something novel. They set out to find these novelties. They had poor success until an accident favored them. Mr. Heins lives up near Mohegan, north of the metropolis. One Sunday he went out for a stroll, and the first thing he knew he was standing on the brink of a quarry. His curiosity led him to inspect it, and what was his surprise to discover a hard granite, with an unusual color,— golden yellow. He almost shouted for joy. This granite, which, at close range, presents an appearance like small particles of pure golden butter floating separately on a surface of milk, at a distance gives the impression that it

has caught and reflects the mellow golden glow of a setting sun. . . . Just at present the architects are not doing much on the plans by reason of the fatality which has pursued the Building Committee of the cathedral's board of trustees who must pass upon the drawings.

— Prof. Frederick M. Noa, who was with the class in its Freshman year, is now in Cuba in the interests of the American Unitarian Association. He was recently associated with others in the holding of fortnightly meetings in Boston, devoted to the practical study of Spanish.— Edward Morgan, son of Harry G. and Kittie E. Manning, was born Oct. 3, 1902.— A child was born to Mr. and Mrs. Francis P. Hall last spring. They have removed from Wolfeboro, N.H., to Peterboro.

1884.

Dr. Augustus H. Gill, *Sec.*, Mass. Inst. of Technology, Boston, Mass.

The secretary, with the aid of an ex-secretary, Mr. Appleton, has been endeavoring to unearth some of the undergraduate history of the class, that since graduation is to be found in the files of the "Directories" and this journal. Our first class meeting resulted in the choice of H. F. Otis for president and A. L. Rotch for secretary. No class "supper," as it was then called, was held during our Freshman year. Having arrived at the distinction of "second-year men," the event was celebrated late in the year, April 5, 1882, at Young's, G. T. Jarvis in the chair, with Rotch secretary and treasurer, and an attendance of thirty-eight. The second annual supper took place at the Quincy House, Feb. 21, 1883, with H. W. Tyler as president and Rotch, secretary. The attendance was the same. The third annual dinner was held at Young's on Feb. 21, 1884, with Rotch as president and G. H. Heywood, secretary, forty-one being present. It was at this meeting that George Washington was elected an honorary member of the class! Such excesses! The meetings for the formation of the class organization were held May 9 and 21, 1884.— Bennett married, November 5, Mrs. Susanne (Train) Pratt at the First

Church in Brookline.— Mellen has returned from a trip West where he has interests.— Gill has been elected president of the North-eastern Section of the American Chemical Society.— Tyler is vice-chairman of the College Entrance Examination Board.— Lull is chemist in charge of some experiments in manufacturing paper for the By-products Paper Company at Niagara Falls.— The German emperor has conferred on Rotch the Royal Order of the Crown of Prussia, third class, in recognition of the work he is doing in the international exploration of the atmosphere.

1887.

EDWARD G. THOMAS, *Sec.*, 4 State Street, Boston, Mass.

Carney has returned from Berlin to take the office of assistant general superintendent of the Pennsylvania Steel Company, with headquarters at Steelton, where the manufacture of products of the company is wholly in his charge.—John W. Adams has been placed in charge of the elevators and the general grain business of the Great Northern Railway, and is located in Minneapolis, Minn. —Gelett Burgess has written a series of fourteen stories, entitled "The Picaroons, or a San Francisco Night's Entertainment," which will come out in *Pearson's Magazine* during the coming year.— Sidney Williams, superintendent of the collieries of the Pennsylvania Coal Company, now controlled by the Erie Company, has resigned to become manager of G. B. Markle & Co.'s mines near Hazelton, Pa. Mr. Williams has been with the company since 1895.

1888.

WILLIAM G. SNOW, *Sec.*, 245 No. Broad Street, Philadelphia, Pa.

The machine shop of George W. Hamblet, Lawrence, Mass., was burned October 17, entailing a loss of $25,000, covered by insurance.—Amory Prescott Folwell presented a report on Sewerage and Sanitation at the October meeting of the American Society of Municipal Improvement, held at Rochester, N.Y.—Henry J. Horn, of Livingston, Mont., recently appointed assistant gen-

eral superintendent of the Northern Pacific Railway, in reply to a request from the secretary for news, wrote as follows: —

There is no news from this part of the country for the TECHNOLOGY REVIEW. I have not seen a "Tech" man except an occasional youngster who has grown up since our time. About all we have out in this part of the country is what appears to us to be plenty of work. Business is good, and I think it will be better. Have recently had some additions to the Montana Division, so now have 800 miles of railroad. Would be glad to show you over every foot of it if you come out here.

—Charles A. Stone is a director of the City Trust Company of Boston.—Frederick H. Safford is now located in Pittsburg.—William T. Keough was chosen a member of the Boston School Committee at the recent elections, having been nominated by all the parties.—L. A. Ferguson is now second vice-president of the Chicago Edison and Commonwealth Electric Companies. He was promoted from the general superintendency to this higher position a few months ago.— Fred R. Nichols, instructor in physics at the Chicago English High and Manual Training School, was chairman of the Committee of Arrangements for the recent Convention of Physicists held at the Lewis Institute, Chicago.—Charles L. Weil has lately formed a partnership as junior member of Van Tuyl & Co., consulting electrical and mechanical engineers, Detroit, Mich., in addition to his duties as professor of mechanical engineering at the Michigan Agricultural College.

1889.

WALTER H. KILHAM, *Sec.*, 9 Park Street, Boston, Mass.

The *Brickbuilder* for November has the following: —

NEW METHODS IN BRICKMAKING.

The Fiske Brick Company has recently completed its new plant at Dover, N.H., in which will be manufactured hard-burned common red building brick. The success of this enterprise, which seems to be assured, marks a new epoch in the brickmaking industry of the country. Hand labor, which in the ordinary brick-yard constitutes about one-half the entire cost of manu-

facture, is here almost entirely eliminated, the bricks being handled through nearly the entire process in large masses by electrically driven machinery under control of one operative, the bricks being touched by hand but once until they are delivered in the storage house as finished product.

Mr. J. Parker B. Fiske, son of George M. Fiske (Fiske Brick Company, Boston), is the inventor and patentee of the devices used. He is a graduate of the Massachusetts Institute of Technology, and was formerly connected with the Westinghouse Electric Company of Pittsburg.

Probably no series of inventions which have had to do with the clay-working industry have attracted such wide-spread attention as have these, and the great saving which is made in the cost of manufacturing common brick by this process will undoubtedly largely increase the use of that material.

— George W. Stone was married on October 7 at the First Congregational Church, Washington, D.C., to Miss Mary Knight Bradford. They will reside at No. 2135 P Street, Washington.— Probably few Tech men are aware of the important influence which several '89 men are having upon the construction and design of the most important United States government buildings. No less than three '89 men are holding important positions in the office of the Supervising Architect of the Treasury Department, and one of them is second in position only to the Supervising Architect himself. It is not saying too much to state that much of the remarkable improvement in the character of government work that has been made during the last five or six years is due to men of '89. From a condition resembling that of any other government bureau, the Supervising Architect's is now run much like any large architect's office; and the personal and professional character of the staff is on a very high plane. Three men — Crane, Pietsch, and Stone — are employed constantly on government work; and Rankin has designed some very important buildings. Edward A. Crane, after leaving school, entered the office of Shepley, Rutan & Coolidge as a student, where he stayed for about nine months, and then went with Wheelwright & Haven, with whom he stayed for nine years, being head draughtsman for seven years, after which he came to the Supervising Architect's office, where he received an appointment during Mr. Aiken's time as "Senior Architectural

Draughtsman." This position should be explained by saying that the various draughtsmen are graded according to the compensation they receive, and that there are several Senior Architectural Draughtsmen here, the title meaning nothing beyond explaining the grade of the men. At the time he came to the office, Mr. James Knox Taylor, the present Supervising Architect, held the position of "Principal Draughtsman," which in any ordinary office would correspond with that of "Chief Draughtsman." When he was made Supervising Architect, Crane was promoted to his position. Later various changes were made in the office, the position of "Chief Constructor" and "Chief Designer," held by two entirely different men, being abolished; and the authority vested in these men was placed in Crane, with the title of "Chief of Engineering and Draughting Division," his present position. He has at present under his immediate direction in this division a force of approximately one hundred and twenty-five men, including strictly architectural draughtsmen, structural engineers, heating and ventilating engineers, and electrical draughtsmen.— Theodore W. Pietsch, after leaving school, was employed for two years in the office of Burnham & Root of Chicago, Ill., after which he went to Paris, and entered the École des Beaux-Arts, graduating from there in December, 1897, with the title of "Diplomé par le Gouvernement Français," he being the seventh American to graduate from that school. Upon his return to this country he was employed in the office of Howard & Cauldwell, New York City, and later in the office of Hornblower & Marshall in Washington, being engaged on important work in each office. He later received an appointment in the government office, as a result of a civil service examination, where he is now employed, holding a very important position with the title of "Designer," and has direct charge of the preparation of the drawings for several important government buildings.— George W. Stone has been employed in various offices, but principally with Wheelwright & Haven of Boston. He went to the Supervising Architect's office from that office, holding the title of "Senior Architectural Draughtsman" there, and has been employed on

drawings for several of our most important buildings. He has recently been placed entirely in charge of the drawings for the new Bureau of Standards to be erected in Washington, the drawings not only being prepared under his direction, but he also superintending the construction of the building.— John Hall Rankin was employed for a brief time after leaving school with some of the architects in New York and Philadelphia, when he formed the partnership of Rankin & Kellogg, their first commission being the Wernersville Asylum, Wernersville, Pa.,— a very important piece of work for two young men to undertake. As a firm, they have been extremely successful. They have had very important commissions, several churches in and about Philadelphia, residences, etc. They won the competition for the Newark Free Public Library, also the competition for the United States Custom-house and Post-office Building at Camden, N.J. Their most important commission at present is the United States Court-house and Post-office Building at Indianapolis, Ind., which was won as the result of a competition, and will cost, including site, $2,200,000. Rankin is a member of most of the important clubs in Philadelphia, including the Art Club, the Germantown Cricket Club, the Philadelphia Country Club, and several others. He is a well-known and extremely popular man in Washington, and is considered one of the most successful men in his profession there. The character of the work of all these men is of the very best.

1890.

GEORGE L. GILMORE, *Sec.*, Lexington, Mass.

Dr. Gary N. Calkins, of the Department of Zoölogy of Columbia University, has been appointed consulting biologist to the New York State Pathological Hospital.— "The St. Louis World's Fair managers have appointed a special committee to look after the refrigerating exhibit, and approximately $500,000 will be expended for the purpose. They have recently appointed Gardner T. Voorhees, of Boston, Mass., as their consulting refrigerating engineer. Mr. Voorhees is now at work on plans for the exhibit, and will

make an extensive trip, visiting the various manufacturers of ice-making and refrigerating machinery and appliances throughout the United States, to arrange for the character and scope of their several exhibits, etc. Mr. Voorhees is a member of the American Society of Mechanical Engineers, is well known to readers of *Ice and Refrigeration* as a frequent contributor to its columns, and as the author of 'Indicating the Refrigerating Machine,' and is well qualified through his technical knowledge and very considerable experience to plan and arrange for an exhibit which, with the aid of the exhibitors, will reflect credit upon the industry, and serve to greatly increase the already high reputation enjoyed by American ice and refrigerating machinery makers in most quarters of the habitable globe." (From the November issue of *Ice and Refrigeration.*)— "Mr. W. B. Poland, who in November succeeded Mr. Fritch as superintendent of the Indiana Division of the Baltimore & Ohio South-western at Cincinnati, is a graduate of the Massachusetts Institute of Technology. In 1891 he was on River and Harbor Surveys, and later was superintendent of construction in charge of Point Judith Harbor of Refuge off the Rhode Island coast. For five years, 1892–97, he was assistant engineer of maintenance of way on the Chicago Division of the Cleveland, Cincinnati, Chicago & St. Louis. Two years later he went with the Baltimore & Ohio South-western as engineer of construction on the Mississippi Division, and in September, 1899, was appointed division engineer. Mr. Poland continued as a division engineer for this company until his appointment as above."— Charles Hayden has been appointed an aide-de-camp with the rank of major on the staff of Governor Bates of Massachusetts.— Calvin W. Rice was a member of the committee having in charge the celebration of the eightieth birthday of Mr. John Fritz, October 31, at the Waldorf-Astoria, which signalized the successful founding of the John Fritz Gold Medal for achievement in the industrial sciences. Covers were laid for about five hundred members of the different engineering societies.

1891.

CHARLES GARRISON, *Sec.*, Lexington, Mass.

James Swan was ill during November with appendicitis at Camden, N.J. He has a son a few weeks old.— Lewis A. Dunham sends a line from Kansas City in regard to the Class Book.— Ernest A. Hersam also sends word from Berkeley, Cal.— It may be interesting to know that the secretary has been able to raise the necessary funds to pay for the Class Book.—The secretary will be glad to send to any one interested a copy of the Decennial Class Report.— Morris Knowles has recently formed a partnership with L. E. Chapin, of Canton, Ohio, as "Chapin and Knowles, Civil and Consulting Engineers." Mr. Chapin has charge of the Canton office, and Mr. Knowles of the Pittsburg office. Mr. Knowles still retains his office of resident engineer of the Bureau of Filtration at the Department of Public Works, Pittsburg, Pa.— George H. Wetherbee, Jr., of White & Wetherbee, Braintree, Mass., has been at Saratoga Springs, N.Y., since early spring as resident engineer for the Sewerage Disposal Plant.— William I. Palmer was married, October 29, to Clara M. Hummitsch at Newport, Ky.— William Stickney died at his home in Chelsea, May 7, 1902.— S. W. Wilder, Jr., has been advanced from manager of the Merrimac Chemical Company to treasurer.— The secretary would like to have the correct address of the following: Herbert E. Hathaway, Guy E. Mitchell, William E. Leland, Woodruff Leeming, Russell Selfridge, Charles W. Ricker, Frank H. Burton.— Thomas Creden has just been married at Sydney, N.S.

1892.

PROF. SEVERANCE BURRAGE, *Sec.*, Purdue University, Lafayette, Ind.

Mr. Edwin R. Weeks, consulting engineer, New Nelson Building, Kansas City, Mo., announces that he has taken into partnership William R. Kendall and Walter M. Newkirk, and will continue practice under the firm name of Weeks, Kendall & Newkirk. — Dr. Arthur M. Worthington, of Dedham, Mass., was married

to Miss Louise T. Marsh, of Dedham, on the 8th of last October. Dr. and Mrs. Worthington have the best wishes of the members of the class.— A letter from F. L. Francis, of 36 East 20th Street, New York, recently received by the secretary, says: "I am now with Charles A. Platt, architect, in New York. Mr. Platt is considered one of the foremost authorities in America or Europe on the formal garden and its accessories, and has turned out some very beautiful work. Notable are Mrs. Charles F. Sprague's 'Faulkner Farm' at Brookline, Mass., Captain Larz Anderson's gardens at the same place, and numerous estates in Cornish, N.H., Windsor, Vt., and Dublin, N.H. We are at present very busy on a very large Children's Home for Charles M. Schwab, at Richmond Beach Park, S.I., in addition to a large number of country houses; and, as I have the oversight of considerable of the work, I am kept busy. Should be glad to see any of the men at our office."— The class decennial held in Boston, on December 26 and 27, in accordance with notices previously issued by the committee, passed off very satisfactorily; for, while the number of men present was not so large as anticipated, owing to the fact that many were deterred from coming at the last moment, those actually present seemed thoroughly to enjoy the reunion. The party gathered at the Brunswick Hotel between five and six, and, after the business meeting of the M. I. T. A. A. Association, attended the banquet in a body,— twenty-two in all,— Bigelow, C. H. Chase, C. E. Davis, Dean, Derr, Douglas, C. E. Fuller, Heywood, Ingraham, J. F. Johnson, Johnston, Metcalf, Moody, Perkins, Pope, Rhodes, Sager, Sargent, Skinner, Wendell, and Wales. A brief account of the dinner, which was a jolly function, is found elsewhere in this issue of the REVIEW.

On the following morning a party of nineteen — Chase, Curtin, Derr, Douglas, Fuller, Heywood, Holmes, Ingraham, Johnson, Johnston, Metcalf, Moody, Park, Pope, Sager, Sargent, Skinner, Wendell, and Channing Wells — met at the Technology Club, which was thrown open to the class by the courtesy of the club officers, and, after a short social gathering, made a tour of inspection through all of the Institute buildings, under the leadership of

the Registrar, Mr. Walter Humphreys, and the class professors. This proved to be, perhaps, the most interesting event of the reunion, as few of the men not actually connected with the Institute had any conception of the wonderful growth and development of the Institute equipment. Even the old Rogers Building was transformed within, with its new library and its new quarters for the Dean, the Secretary, the Registrar, etc. It was good to see some of the familiar faces, in spite of the fact that the visit was made in the holiday recess. The president unfortunately was out; but Dean Burton and Secretary Tyler gave the class a warm welcome, as did a number of other professors seen in the different departments. At noon the party returned to the club, and held its formal meeting, with John Andrew Curtin, Esq., as chairman. A constitution for permanent class organization, submitted by Mr. Metcalf, a copy of which will shortly be sent to '92 men, was then adopted; and upon motion of Mr. Pope a committee of three was appointed by the class to nominate officers under it. This committee, consisting of Douglas, Pope, and Wendell, reported the following list of candidates, who were duly elected by the meeting: for president, Leonard Metcalf; for first vice-president, John Andrew Curtin; for second vice-president, J. Scott Parrish; for secretary-treasurer, William A. Johnston; and for assistant secretary-treasurer, Lewis P. Cody. After approving the action of the Decennial Committee in calling for a contribution of two dollars from each member of the class of '92 toward a class fund, the meeting adjourned to the dining-room, where a very attractive lunch was served. Between courses the class president read a number of letters received from different men who were unable to be present, but who had sent a word of welcome. A few extracts from these letters appear below, and others will appear in the next issue of the Review. Lunch over, the party ascended to the billiard-room, where the afternoon was spent in retraversing the good old days of '92, and filling in the gap to the present day. The request for a statement of individual salaries, at the end of the fifth and tenth years after graduation, brought out some interesting figures. The lowest figures for the fifth and tenth year salaries

were $900 and $1,200; the highest, $4,000 and $7,500; the average, $1,669 and $3,272, respectively. The percentage increase is certainly encouraging. Burrage wired, "Regret absence from decennial. Prosit '92." L. P. Cody, "Best wishes for yourself and all my old friends." A. P. Mathews, who, according to the Chicago papers, has, with Dr. Loeb, discovered the key to perpetual life, writes: "Truly, I shall be with you in spirit, if not in the flesh, at '92's decennial celebration; for the memory of our classmates and years in the Tech remains always green with me. Should you see any of the boys, after this letter reaches you, please greet them for me. My financial bones have been picked so clean this fall that no sinews for travel remain upon them. Best greetings to all." F. L. Francis sent greetings, and expressed the hope that the "class of '92 may ever stand for progress, for fraternity, and for loyalty to the M. I. T." Henry D. Shute wrote: "The circular from the Committee on Class Decennial has the old-time ring to it; and, if it was at all possible, December 26 would find me with you. As to an outline of my ten years' experience, that is a very easy matter. I started in with the Westinghouse Electric Company, have plugged along through the shop, the engineering department, and the commercial department. The other day, by some strange chance, the powers that be boosted me up, gave me a handle to my name, and have put me in a position closely identified with the management of the concern. All this time my nose has been so close to the grindstone that I am still single, although 'looking up and taking notice.' I wish you would tell the '92 fellows that, in my opinion, Pittsburg is a pretty good place; and I sincerely hope that any of them that come out this way will look me up, either at my house or at the works." W. Spenser Hutchinson wrote: "I am sorry I can't be with you at the reunion; but I took my vacation last summer, and am at the eternal grind again from daylight till dark. It's all play now after lamplight. Eleven hours is enough. Give my regards to the boys, and wish them all a Merry Christmas and a 'Happy New Year.' Best wishes to yourself, in which three little Hutchinsons join me." J. Scott Parrish wrote: "It is a great disappointment

to me not to be able to be with the good fellows of dear old '92, on Friday and Saturday of this week. The facts are, I am scheduled to play Santa Claus at my own home; and having become a great singer, since learning the art of being a blacksmith, I am to sing on Saturday next at a church service, where I am told my services cannot be dispensed with. However, on the morrow they will regret it, though too late. Please remember me very kindly to all of the fellows. I wish I was there to slap the professors of our class on the back, as I never got very close to such an M. I. T. dignitary during my four years' work. I hope they are all growing in usefulness, thus adding fame to our Alma Mater, and that the product of '92 is to be worthy of their sires. Faithfully yours, J. Scott Parrish, Corporal Company C."

1893.

Frederic H. Fay, *Sec.*, 60 City Hall, Boston, Mass.

The decennial anniversary is to be observed at commencement by a class reunion, which will be by far the most important class gathering since graduation. The year will be marked also by the publication of the Decennial Class Catalogue. During the winter informal class meetings will be held at the Technology Club on January 24 and March 21, but the annual meeting usually held in March is postponed until the commencement celebration. This year commencement comes on June 9, and the decennial celebration will probably occupy that and the following day. Plans for the celebration will be announced in subsequent notices, but it is not too early for the members to make their arrangements to be in Boston for the important event.— Miss Mary Hayes Huse, of Newburyport, and Mr. William Brewster Page, of Fitchburg, were married at Dover, N.H., at noon on Wednesday, the 10th of December. The wedding was at the home of the bride's uncle, Dr. Hayes. The guests were confined to the relatives and intimate friends of the two families. The bride was attended by her sister, Mrs. A. B. Brown, as matron of honor, and Miss Elizabeth C. Sawyer, of Dover, and Miss Susan

M. Coffin, of Newburyport, as bridesmaids. Mr. David P. Coffin acted as groomsman. The ushers were Mr. Henry Wheelwright, of Boston, Dr. A. B. Brown, Mr. A. W. Rantoul, and Mr. Grosvenor T. Blood. Since their return from a honeymoon trip to the South, Mr. and Mrs. Page are staying at Fitchburg until their house at Leominster is ready for occupancy.— The Insurance Engineering Experiment Station, recently established by the Associated Factory Mutual Fire Insurance Companies, under the direction of Professor Charles L. Norton as engineer in charge, has published its third report. This report deals with the protection of steel against rust by means of concrete,— a subject which is becoming of great importance to the engineering profession. The report is a valuable one, and is referred to editorially by the *Engineering News*, in its issue of Oct. 23, 1902, as follows: "Additional and valuable data concerning this [protection of steel against corrosion], however, is afforded by recent tests at the Insurance Experiment Station, which are described by Professor Norton in an article published in this issue." It is proposed to study later the action of paints in protecting steel, and also the action of corrosion in long periods of time as shown by the steel in the new experiment station, now being built.— Samuel P. Waldron has recently been appointed engineer in charge at the Berlin works of the American Bridge Company at East Berlin, Conn., and has the entire responsibility for the office work at that important plant. Waldron has been engaged in bridge work for about nine years, the first four of which were spent as a draughtsman with the Boston Bridge Works and the Pennsylvania Steel Company. In 1898 and 1899 he was an assistant engineer at the Keystone Bridge Works of the Carnegie Steel Company, Limited, at Pittsburg, Pa. In 1900 he became assistant engineer of the Eastern Bridge and Structural Company at Worcester, Mass., where he was soon put in charge of the draughting-room. A year later the American Bridge Company offered him the position of assistant engineer and chief draughtsman at the Berlin plant, which he accepted; and about six months ago he was promoted to his present position.— At the alumni dinner on December 26, '93 was represented by Bemis, Blood, W. A. Clapp,

Crosby, C. E. Davis, Fay, and Hagar. Charles M. Spofford was elected a member of the Committee on Associate Membership of the Alumni Association.—Albert L. Goetzmann is division superintendent of the Chicago & North-western Railroad at Winona, Minn.— At the International Congress of Americanists, which met at Columbia College, New York, in October last, Arthur Farwell, of Newton, Mass., read an interesting paper on "American Indian Music: Ethnic and Artistic Significance," with illustrations upon the pianoforte.— Charles Winthrop Sawyer is acting as assistant to C. L. Adams, instructor in Free-hand Drawing at the Institute, and, in addition, continues the practice of his profession, architecture.— Kilburn S. Sweet is giving this year a course in surveying at the Boston Young Men's Christian Association evening school.— The sad news has been received of the death, in December last, of the wife of Charles A. Tripp, of Indianapolis, Ind.— Frederic H. Fay was elected secretary of the Association of Class Secretaries at its annual meeting in November, succeeding Walter B. Snow, '82.— Herbert A. Houghton is mechanical draughtsman-at-large in the office of the Chief of Ordnance, United States Army, Washington, D.C.

1894.

Samuel C. Prescott, *Sec.*, Mass. Inst. of Technology, Boston.

The last report of the Smithsonian Institution contained an interesting account of "Some Recent Astronomical Events" by Charles G. Abbot, aid acting in charge at the Astrophysical Observatory at Washington. Abbot has recently been elected Fellow of the American Association for the Advancement of Science.— Samuel G. Reed was married on the 15th of October to Miss Beulah Morse Kendall, daughter of Mr. and Mrs. Albert Glenn Kendall, of San Bernardino, Cal. Reed is now located in Portland, Ore., where he has a very responsible executive position with the Electric Light and Power Company. Those of us who still remain in and near Boston will miss our class president from our class dinners and occasional reunions.— George W. Sherman has

recently spent a few weeks in America. On the 25th of November he was married to Miss Josephine Crumvine, daughter of Mr. and Mrs. Martin H. Crumvine of Akron, Ohio. Mr. and Mrs. Sherman sailed for England in December, and reside at 3 Green Bank, Waterloo, near Liverpool. Sherman is superintendent of the North-western Rubber Company at Liverpool.— F. P. McKibben has been elected librarian of the Boston Society of Civil Engineers. During the past year ne has also been assistant engineer of the Massachusetts Railroad Commissioners.— S. C. Prescott recently attended the meeting of the American Public Health Association at New Orleans, and read a paper on "Certain Precautions Required in the Interpretation of the Colon Test of Potable Waters." He also spent a few days in studying certain bacteriological aspects of the process of sugar-making. This was done for the most part at Raceland plantation, owned by the Leon Godchaux Estate, and managed by Jules Godchaux, '93, where every facility was given for observation and investigation, and the most unbounded hospitality was extended. The secretary also attended the Washington meetings, and presented a paper before the Society of American Bacteriologists on "Further Evidence of the Apparent Identity of Bacillus Coli and Certain Lactic Acid Bacteria."— L. P. Lane and W. E. Piper represented the class at the alumni dinner.

1895.

GEORGE W. HAYDEN, *Sec.*, 493 Warren Street, Boston, Mass.

Arthur D. Dean, instructor at the Mechanics Arts High School, Springfield, Mass., has been appointed a special agent of the Porto Rican department of education to investigate the conditions of the island relative to establishing a system of industrial education. Mr. Dean has given much thought to the matter already, and recently refused to become superintendent of the industrial educational system there. He left Springfield about Christmas time, and went at once to Porto Rico. He expects that it will take him about a month to cover the ground on which he will have to report. He has a leave of absence from the School Committee of Spring-

field, so it was not necessary for him to resign his position at the Mechanic Arts High School.— John Colvin Wolfe was married, November 19, to Laura Merrick Guyal at Christ Church Chapel, New Orleans.— "Azel Ames, Jr., lately appointed signal engineer of the Boston & Albany, was born at Wakefield, Mass., June 3, 1873. He went to Phillips Academy at Andover, Mass., and then entered the Massachusetts Institute of Technology, graduating in 1895, after taking a course in Civil and Mining Engineering. Early in June of that year he went with the Boston & Maine as a transitman, and worked as such and as assistant engineer until 1896, when he resigned as assistant engineer and went to work in the section gang on the Western Division, where he remained until 1898. Mr. Ames served in the Spanish War as captain in the First Regiment United States Volunteer Engineers. After being mustered out of service in 1899, he took the position of assistant roadmaster on the New York Central & Hudson River, and during that year (1899) had special duties assigned to him, and was also supervisor. In August, 1901, he went with the Boston & Albany as roadmaster, from which position he has recently been promoted."

1896.

E. S. Mansfield, *Sec.*, 70 State Street, Boston, Mass.

The eleventh annual dinner of the class of '96 will probably be held during the second week in March, 1903, a notice of which will be sent out in due time. It is strongly urged that members of the class reserve, as far as possible, the evenings of that week in anticipation of the event until the exact date is agreed upon, and that those located at a distance from Boston plan any prospective trips so that they may be in town during that week. A new constitution is to be adopted and officers elected at this meeting.— Guy L. Morrill writes that he is temporarily located in Princeton, N.J., where he is studying for the ministry at Princeton Seminary.— E. A. Baldwin spent a few days at his home in Dorchester during the middle of December, but has since returned to Schenectady, N.Y., where he is engaged in engineering work with the General

Electric Company. It is reported that Mr. Baldwin has organized an athletic association in Schenectady for the workingmen of the General Electric Company and of the Schenectady Locomotive Works. We hope to hear more about this later.— A. K. Downes is with the Weber Railway Joint Manufacturing Company, having a New York office at 71 Broadway and a Boston office at 70 Kilby Street. Mr. Downes spends most of his time on the road.— On the 4th of last November, Butler Ames, of Lowell, was elected to Congress from the Fifth Congressional District on the Republican ticket by about 1,000 plurality. Mr. Ames has served very efficiently in both branches of the State legislature during the last few years, and now enlarges his political sphere by representing his State in Washington.— A letter from C. E. Lawrence announces that he is now living at 114 Woody Crest Avenue, New York City, where he spends his spare time training a new parcel of male matter which arrived last August.— Ralph S. Whiting has associated himself with H. C. Ring, for the practice of architecture, with offices in the Paddock Building, Boston.— On Nov. 29, 1902, Grace V. McCann, wife of Frank G. McCann, died of tuberculosis.— E. C. Hultman has apartments for the winter at 601 Boylston Street, his evenings being occupied with studying law at the Y. M. C. A.— In a letter dated Ashtabula, Ohio, Howard E. Smith adds the following: —

I feel somewhat separated from the Technology world, for there are none of the boys around here. I occasionally hear from one and another, generally in an indirect way. I am enjoying life here at Ashtabula (within the soft coal belt), looking after the government improvements at Ashtabula and at Conneaut harbors. The commerce of this port is very large, over 4,000,000 tons of iron ore being received last year during the season of navigation, from May to December. You very likely know I am married, and I now have a little boy about five years old.

1897.

JOHN A. COLLINS, Jr., *Sec.*, 79 TremontS treet, Lawrence, Mass.

Joseph Bancroft, of Wilmington, Del., was married on Wednesday, October 29, to Miss Elizabeth Howard, of Burlington, Vt.

Miss Howard is a daughter of General Oliver Otis Howard.— David Dudley Field, Jr., at last reports, was in Geneva, Switzerland, engaged with his father in the consolidation of all the tram lines there.— Stanley Howland is first lieutenant in the United States Army, is stationed at Fort Assiniboine, Mont., and is acting in command of his company.— Jerry Spence, who was with the class but a short time in the Freshman year, is junior partner in the architectural firm of Finley & Spence, St. James Street, Montreal. The firm has recently been awarded the contract for building the largest office building in Montreal.— Alpheus G. Woodman was married on Aug. 4, 1902, to Miss Marion Louise Cade, of Cambridge, Mass.— "It is with deepest sorrow that we are called upon to chronicle the death of another one of our classmates. Mr. Franklin Smith died Oct. 29, 1902, at his parents' home in Cambridge, Mass. He was beloved by all who came in contact with him. Quiet and modest in manner, a hard, persistent worker, a good friend, and a man of exceptionally high ideals, the Institute loses one of her most promising graduates. At the time of his death, Mr. Smith was principal of the Manual Training School in Passaic, N.J., where he met with marked success in his work. Last June he was married to Miss Charlotte E. Hawes, of Cambridge; and apparently no brighter future ever awaited a young couple, when in September, after a few brief months, a hemorrhage of the lungs terminated in consumption." (P. L. Dougherty, '97).— Arthur L. Jennings is with the B. F. Sturtevant Company, Philadelphia.— Frederick E. Healy, who for the past year has been occupied at the United States Mint, Philadelphia, drawing up the plans and specifications for the machinery in connection with the mechanical equipment of the new mint building at Denver, Col., will soon leave for the West to assume charge there as mechanical engineer.— David Schwarz is a chemist of the Southern Cotton Oil Company at New Orleans, La.— Charles B. Clark has just accepted a position as principal assistant engineer of the Big Four Road, with headquarters at Cincinnati, under G. W. Kittredge, '77, who is chief engineer of that road. Clark was for three years with the Southern Railway, doing

bridge work and all kinds of other railroad work, was for a short time in New York City on structural work, and later was for two years with Chambers & Hone, consulting engineers, at Amsterdam, N.Y., principally on electric railway work.

1898.

C.–E. A. Winslow, *Sec.*, Hotel Oxford, Boston, Mass.

George E. Bergstrom has moved further westward, and his present address is the Laughlin Building, Los Angeles, Cal.— M. F. Delano is president and manager of the Millville Poultry Farm Company at Millville, N.J. The Plymouth Rocks, Wyandottes, Pekin Ducks, and Bantams from this farm have won four hundred and fifty prizes during the last three years, distinguishing themselves at the poultry shows of 1902 in New York, Boston, and Philadelphia. — Four '98 marriages have been recently announced to the secretary, as follows: Zourie H. Long was married on November 19 to Miss Leanore Jones, daughter of Mr. and Mrs. W. P. Jones, of Nanticoke, Pa.— R. S. Willis was married on December 9 to Miss Wilhelmine Bayless, daughter of Mr. and Mrs. Benjamin Bayless, of the City of Mexico. The young couple are at home at La Hacienda de Yale, Estado de Oaxaca, Mexico.— L. J. Seidensticker was married December 15 to Miss Emma Edith Rice, daughter of Mr. and Mrs. George P. Rice, at the bride's residence, 12 Sacramento Street, Cambridge. — Finally, F. C. Field's marriage to Miss Florence Arnold, daughter of Mr. and Mrs. Edward Sheldon Arnold, took place on January 7 at the Church of the Holy Trinity, Brooklyn, N.Y.— A letter from E. S. Chapin contains the following notes about some Course V. men: "Areli Hull Jacoby is about to accept a position with a dyestuff firm in New York City, leaving the F. E. Atteaux Company of Boston, dealers in chemicals and dyestuffs, with which he has been connected for the past three years.— Owen Leonard was obliged to stop work last spring and go to Lake Winnipesaukee for his health. After spending the summer at this healthful and beautiful lake, he went West by the advice of his physician. I believe he is in

Denver, where he hopes with rest and fresh air to build up his naturally weak lungs in two or three years.— Charles A. Torrey, Jr., after leaving Philadelphia, returned to Boston, where, after working a few months with Billings, Clapp & Co., manufacturing chemists, he started in again for himself. — Arthur Felix Porter was married to Miss Helen Post on Thursday afternoon, November 20, at Pompton, N.J. George T. Cottle was one of the ushers."— In response to a request from the secretary for information as to the condition of affairs among the architects, B. F. W. Russell writes as follows: "During the few years that have passed since '98 was graduated, the Course IV. men have divided themselves into several easily classified groups. There are those who have followed the profession of architecture and those who have forsaken it. There are those who have established offices of their own and those who have not. There are some who are still giving their time to advanced study. All, in whatever group they are, can but just begin to realize what Technology has really meant to them. Of the men who have changed to other work, Coombs is busily engaged in selling materials to build what his friends are designing.— Tucker is with the Library Bureau, scheming to fit up the public buildings which his classmates have developed.— Alexander has just made his life-work the ministry. He is now at the Episcopal Theological School in Cambridge.— Probably Putnam and Cox, of those who have established their own offices, have brought more honor to '98, by winning the competition for the Boston Athenæum, than any others have yet been able to do. Many of the older and most distinguished architects of the country were defeated by these younger men.— Ferguson, who has become a member of the firm of Carpenter, Breese & Ferguson, one of the most prominent Southern offices, has recently been married.— Whitten is creating reforms in the architecture of Cape Breton, with an office at Sydney.— The merry Ward W. Ward has an office in New York City, and Dana is one of his office force.— Of those who are still in offices bearing other names than their own, Furbish, Keene, McIntyre, Richmond, Russell, and G. P. Stevens are in Boston;

Foulkes, House, and Tietig are in New York; DeGolyer and Tallmadge are in Chicago; Bennink and W. W. Stevens are in Washington; Mathews and Heathman are in Dayton, Ohio, and Lee in Cincinnati; Little is in St. Louis, and Davis in Montreal; Ingalls and Cox are studying at the École des Beaux-Arts in Paris. There are three groups of Course IV. men which, strange to say, are very much changed about from the classification given above; and, stranger still, these groups expand and include all the other courses. They are the married men, the engaged men, and the others. The others are in the distinct minority. All, in whatever group they may happen to be, feel that groups and courses mean nothing to '98 men, and look forward to the time when they may, in some sort of reunion of the future, meet and join in the good old class yell, ending it with a long and lusty 'Technology.'"— H. L. Coburn, ever ready to respond to any call in the name of '98, furnishes the following information about some of the mechanical engineers: "Aside from what may be learned from the Catalogue regarding the whereabouts and doings of the graduates from Course II., I can only report as follows. 'Don' Campbell, who since '98 has been representing the Rand Drill Company at Spokane, has been transferred to Butte, Mont. I judge the change is for the better from a business point of view; but, evidently, 'Don' is not over pleased with Butte as a place of residence. He sent me a photograph recently, which shows that he is still clean-shaven.— H. F. Cobb was married in April last (1902) to Miss Elizabeth Elwell, of Newtonville, and is living in Cleveland, where he is employed by the Brown Hoisting Machinery Company as a sort of aid to the chief engineer.—'Dave' Fenner is in charge of the crucible steel department of the Bethlehem Steel Company, the principal product of the department being the famous 'Taylor-White' self-hardening steel. Fenner had a prominent part in developing this steel. Any of the boys who are in that vicinity should call on 'Dave'; for, aside from the pleasure of renewing friendship, a trip through the vast works is extremely interesting.— A letter received early in the summer from George Haskell states that he is 'head over heels' in work, adding new mills to the

present plant.— Paul Johnson is one of the few 'happy fathers' among the Course II. graduates. He is superintendent of the factory of the Johnson Electric Service Company at Milwaukee. The company manufactures automatic regulating apparatus for heating systems and tower clocks.— Kaufman is back in the engineering fold once more. He is with the Blake Pump Works in East Cambridge, and is engaged most of the time in designing pumps for our new war vessels.— Neidich is making money with the 'Neidich Process,' a very simple invention of his for reproducing imitation typewritten letters. Many attempts have been made, and many devices are now used; but none give the true 'ribbon' effect except Neidich's. He simply replaces the ink roller of an ordinary job press with a wide ribbon, and hence, having set up the matter in 'typewriter' type, gets exactly the same effect that you get from any ribbon typewriter. Incidentally, he manufactures typewriter ribbons.— Pease is in the steel construction business here in Boston.— Riley read a paper on 'The Continuous Record of the Position of an Engine Governor and the Speed of the Engine which it is Governing' at the annual meeting of the American Society of Mechanical Engineers.— Frank Tucker is assistant mechanical superintendent of the Clark Thread Company at Newark, N.J., the place where 'O. N. T.' spool cotton is made.— Warren is back in Boston as heating and ventilating engineer with French & Hubbard.— 'Cliff' Wilder is associated with the 'Engineer Company' of New York, of which Fred Field, '96, is secretary. The company is introducing the 'McLean System' of forced draft, and claims to get great economy by utilizing cheap fuel. 'Cliff' has direct charge of installation and repairs, and is apparently well pleased with the outlook."— D. C. Campbell wrote from Butte to Coburn, under date of December 1, giving news of G. A. Hutchinson's recent illness: "Last Thursday," he said, "I went over to Anaconda to see Hutch, who is just recovering from a long siege of typhoid fever. He has been in the hospital for seven weeks; and Thanksgiving Day, when I was there, was the first time he had walked out, and only the second time he had been outside. He had a pretty

severe time of it for a couple of weeks, but is now on the high road to recovery. I did not know of his illness until shortly before that day, when I noticed a small item in a newspaper to the effect that he was recovering. So I wrote him at once, and went to see him as soon as possible. When he gets stronger, he will go back to his job once more. . . . George has thoughts of branching out independently as an expert on the economical operation of boilers. He has had all kinds of experiences in that line, and, no doubt, is well able to tackle such a proposition."

1899.

WALTER O. ADAMS, *Sec.*, 1776 Mass. Ave., No. Cambridge, Mass.

It is announced that on October 8 Albert F. Nathan was married to Miss Margaretta Hollinshead at Danville, Ky. They announce that they are at home at the Marlborough, Washington, D.C. — Burt R. Rickards, Ex-Course V., was married to Miss Alma Leighton, at Malden, on October 28. They are to be found at home, after January 1, at 43 New Castle Road, Brighton. — William Alden Kingman was married to Miss Grace Isabel Clarke on Tuesday, October 15, at South Framingham. At home at 164 Central Street, Leominster, Mass. — The class dinner was held at the Hotel Thorndike, December 27, at 6.30 P.M. A very gratifying number of men were present, and the dinner was a great success. The secretary, Walter O. Adams, presented his resignation from that office, to take place at once, as his successor, Mr. Harry L. Morse, had been duly elected by mail ballot from the class at large. Mr. Adams regrets his inability to give to class matters the attention they deserve, and therefore has resigned in favor of Mr. Morse, who is well known for his energy and ability and to whom the secretary wishes the best of success. Mr. Adams will still continue to aid our class work. The secretary reported, among other things, that the class boy, Roger Willard Cannon, had been presented with a very pretty cup, suitably inscribed. The financial report showed a substantial bank balance to the credit of the class. — Arthur L. Hamilton has been in town until within a

short time. He has accepted a position with a copper mining concern in Elizabeth, N.J.— Harold Ayer is now in charge of the analytical laboratory of the Southern Cotton Oil Company, Savannah, Ga.— Miss Henrietta Dozier is an architect with an office at Atlanta, Ga.

1900.

GEORGE EDMOND RUSSELL, *Sec.*, 25 Broad Street, New York, N.Y.

Possibly some of the men noted in the newspapers of September an account of the mysterious disappearance of Chester A. Richardson. The published account did not come to the attention of the writer, and only a few meagre details could be learned. Richardson left New York some time early in September, and went to Munising, Mich., to act as engineer in charge of erecting a large paper-mill for the firm of J. H. Wallace of this city. He had been there but a few days when he decided to take a trip to Chicago, where he would visit friends. Accordingly, he wired ahead, informing his friends of his coming; but, due to a mistake in addressing the telegram, it was not delivered, but sent back to him for correction. When search was made for him, he was nowhere to be found; and, up to this time, no clew has been found as to his whereabouts. A colored porter on the Chicago train claims to have seen him on board, talking with a conductor; but no dependence is placed on his story, which was probably invented for the sake of notoriety. No one save Richardson's relatives hold any hope that he is now alive, and everywhere his friends are mourning for him as lost. No reason can be assigned for so tragic a disappearance, as no motive for suicide could possibly have been harbored in a mind so calm, cheerful, and courageous as his. Neither can the police or secret service men find any clew to foul play, although they have searched thoroughly. These few facts the writer gained from a friend; and, if any one who sees this account can send further information, the secretary would be glad to obtain it.— Lewen F. Searle called a few days ago, and spent a few minutes discussing class news. He is located at Kingston as engineer with the bridge department of the New York Central & Hudson River Railroad.

For some time the road has been renewing its bridges, and Searle is busily engaged with the masonry repairs and foundations.— Ralph Hamlin's new address is 30 Broad Street, New York City, where he has joined the International Paper Company. Since 1900 he has been at Steelton with the Pennsylvania Steel Company, as draughtsman, in the switch and frog department. By his coming to New York, 1900 has received a new addition to its metropolitan flock.— George E. Russell, Course I., is rejoicing over the fact that he is the father of a fine baby-boy, ten weeks old. Another candidate for M. I. T. degrees.— Course I. men are fast forgetting bachelor life. Arthur A. Reimer has just announced his marriage to Miss Jennie Agnes Estes, of Brooklyn, N.Y., under date of Oct. 16, 1902.— Clinton D. Thurber, of Course I., was also made happy last month by the birth of a baby boy. The class extend heartiest congratulations.

1901.

FREDERIC W. FREEMAN, *Sec.*, West Newton, Mass.

The second annual dinner and business meeting was held on the evening of November 14 at the Technology Club, thirty-two members being present. After dinner was over, the election of officers took place, and resulted as follows: president, E. F. Lawrence; first vice-president, H. E. Dart; second vice-president, C. G. Tufts; secretary-treasurer, F. W. Freeman; assistant secretary-treasurer, W. W. Walcott. The business session was followed by speeches from Dean Burton and Mr. Munroe, which were thoroughly enjoyed by all present. The class regrets very much the loss as secretary-treasurer of A. W. Higgins, who has performed the duties of this office with great credit and success. Mr. Higgins felt it was best for him to resign, as he had accepted a position in St. Louis, Mo., where he is superintending engineer of the National Ammonia Company.— Several changes have taken place among the men since the last quarterly report.— Ed. Seaver, Jr., has accepted a position with the National Carbon Company of Cleveland, as assistant in charge of the battery department.— H. O. Cummins is private assistant to Professor Richards at the

Institute.— N. L. Danforth is consulting engineer with the John W. Danforth Company, Buffalo, N.Y.— F. W. Freeman is with the Ætna Woollen Mills, Watertown, Mass.— A postal was received by the secretary just previous to the meeting, stating that M. B. Foster was father of the class baby; but this was contradicted later by the arrival of a card from E. H. Pendleton, announcing the birth of a daughter on September 28, thus taking the honor away from Mort.— The engagements have been announced of A. W. Higgins to Miss Adams of Auburndale, and of J. R. Putnam to Miss Alice Dempsey, of Newton Centre.— The secretary has two weddings to report: H. B. Wood was married to Miss Parker, of Arlington, on November 5; E. S. Foljambe, assistant to Mr R. H. Smith, was married to Miss Stella Davis, of Jamaica Plain, on the evening of Thursday, December 4. The class was well represented among the ushers, who were N. L. Skene, '01, E. T. Robbins, '01, C. F. Willard, '01, and W. M. Rice, '02.

1902.

CHARLES W. KELLOGG, JR., *Sec.*, 51 St. Paul Street, Brookline, Mass.

The following men are graduate students in Architecture at M. I. T.: I. Rayne Adams, 1776 Massachusetts Avenue, Cambridge, Mass.; H. E. Bartlett, 9 Albemarle Street, Boston; W. R. Greeley, 41 Irving Street, Cambridge; W. P. R. Pember, Needham, Mass.; Gilbert Townsend, Carlton Street, Newton; P. R. Whitney, 74 Waban Park, Newton.— Gardner Rogers is with Stone & Webster, 93 Federal Street, Boston.— M. H. Matthies's address is care of B. D. Palmer, Larchmont, N.Y.— R. P. Gifford is with Stone & Webster, Boston.— F. A. Robbins, Jr., and W. H. Sears are with the Pennsylvania Steel Company at Steelton, Pa.— N. C. Page and I. W. Reynolds are assistants in the Electrical Testing Laboratory at the M. I. T.— C. E. Patch is with the Newport News Ship and Engine Company. His address is 122 Thirty-first Street, Newport News, Va.— F. E. Randall is an assistant in the Physical Laboratory at the Institute.— A. E. Ritchie is

with the Maryland Steel Company at Sparrow's Point, Md. — The following men are assistants in the Mechanical Engineering Laboratory at the Institute: C. D. Starr, address 43 St. Stephen Street, Boston, Mass.; and Archibald Gardner, address 146 Marlborough Street, Boston.— A. W. Allyn is with the Carnegie Steel Company, Pittsburg, Penn. — F. B. Galaher is draughting for the Fuller-Warren Warming and Ventilating Company, 43 Milk Street, Boston, Mass.— L. W. Millar is with the Associated Factories Mutual Insurance Company, Milk Street, Boston, Mass. — H. Y. Currey is with the Draper Company, Hopedale, Mass. — Kenneth Locket is with the Fort Wayne Iron and Foundry Company, Chicago, Ill. —E. LeR. Brainerd is with the N. P. R.R. at Billings, Mont.— Towne is assistant in Mechanical Drawing at the Institute. — C. B. Hollis is assistant in the Metallurgical Laboratory at the Institute.— Matt Brodie is with the Sullivan Machine Company, Claremont, N.H.— C. E. McCarthy is an inspector with the New England Bureau of United Inspection, 71 Kilby Street, Boston.— Taft is with the Fairbanks Company, 38 Pearl Street, Boston. — T. G. Miller is with the Mexican Central Railroad at Las Cruces, N.M.— J. D. Ireland is a graduate student at the Institute, address 264 Newbury Street, Boston.— R. B. Lowe is with the Parkhill Manufacturing Company, Fitchburg, Mass., address 414 Main Street, Fitchburg, Mass.— B. W. Mendenhall is with Stone & Webster, 93 Federal Street, Boston. — C. G. and W. J. Mixter are Freshmen at the Harvard Medical School, address 180 Marlborough Street, Boston.— The following men of 1902 are looking forward to graduation next June: J. A. H. Colgan, W. L. Cook, D. H. Fisher, R. S. Franklin, T. V. Fowler, Jr., C. F. Gardner, J. L. Jones, J. K. Leonard, F. P. Montgomery, D. Wemyss, R. B. Pendergast.— Letters to the following men have been returned unopened to the secretary. Any information regarding their address or occupation would be welcomed by him: D. D. Field, C. E. Fleck, S. S. Foster, I. Foster, W. J. Winslow, C. H. Burr, A. I. Dutton, G. E. I. Eager.— W. C. Taylor went to Cincinnati in September to take a position on the Big Four Road. He is feeling happy now over his first promotion to the position of

an assistant engineer of maintenance of way, with headquarters at Springfield, Ohio.—Cecil B. Annett is with Gunn & Richardson, address 25 Pine Street, New York.— Charles J. Bonnemort is transitman for the N.Y. C. & H. R. R.R., address Division Engineering Office, N.Y. C. & H. R. R.R., Albany, N.Y.— Paul E. Chalifoux is with J. L. Chalifoux & Co., Birmingham, Ala.— J. W. Durbin is with the Bell Telephone Company of Philadelphia, address 211 Penn Street, Burlington, N.J.— Walter S. Fitch is master mechanic in the office of the Draper Company, Hopedale, Mass. — Harold H. Fletcher is assistant on engineering corps, maintenance of way department, at the B. & O. R.R. Station, Philadelphia, Pa.— S. A. Gardner, Jr., is fitter with Riter, Conley Manufacturing Company, Leetsdale, Pa.— Beulah C. Hill is computer for Percival Lowell, astronomer, address 163 Huntington Avenue, Boston.— Henry McBurney is draughtsman for the American Bridge Company, address 40 Church Street, Middletown, Conn.— Francis J. Mague, general contractor and teaming, address West Newton, Mass.— Arthur S. More is in the engineering department of the C. C. C. & St. L. Railway, Cincinnati, Ohio, address "The Woodford," Covington, Ky.— A. H. Nickerson is with the Steel Cable Engineering Company of East Boston, address Newton Highlands, Mass.— Redfield Proctor, Jr., is with the Vermont Marble Company, as engineer, at Proctor, Vt.— H. E. Raymond is a student at the Institute, address 84 Ellery Street, Cambridge, Mass.— Charles A. Sawyer, Jr., is assistant in mining engineering and metallurgy at the Institute, address 237 Beacon Street, Boston. — Charles P. Tolman is electrical engineer at the Christensen Engineering Company, Milwaukee, Wis.— Wade L. Wetmore is draughtsman with the Hill Clutch Company, Cleveland, address 882 Franklin Avenue, Cleveland, Ohio.— A. C. Wood is architectural draughtsman with Guy Lowell, 1128 Tremont Building, Boston.— Charles L. Wright is with the Silver Spring Bleaching & Dyeing Company, of Providence, R.I., address 17 Tudor Street, Lynn, Mass.— C. B. Allen and J. A. Hutchinson are with the Riter, Conley Manufacturing Company, Pittsburg, Pa. The former is in the gas-works construction department, address Leets-

dale, Pa. The latter's address is 7724 Hamilton Avenue, Pittsburg.— H. A. Ames and H. W. Westcott are draughting for the American Machine Company, Limited, Howard & Ballough, Pawtucket, R.I. Ames resides at 23 Grove Street, Pawtucket; and Westcott lives in Hopedale, Mass. — The following are assistants at the Institute: A. L. Appleton, 131 Newbury Street, is assistant in Naval Architecture; Miss L. R. Culver is private assistant to Dr. Talbot; S. C. Lind is assistant in Chemistry (his address is 209 Huntington Avenue, Boston); H. L. Sherman is assistant in Mineralogy; C. H. Sisson, in Mining and Metallurgy; O. S. Stockman, 17 Buena Vista Park, Cambridge, is assistant in Physics; A. T. Nelson is assistant in Civil Engineering (he lives at 208 Princeton Street, East Boston,); R. L. Wales is assistant in Gas and Oil Analysis. The following members are with the General Electric Company at Schenectady, N.Y.: Miss E. M. W. Best is a chemist in the research laboratory; L. G. Coburn and Humphreys Miliken are in the testing department; J. L. Curtiss and E. E. Kimball live at 229 Liberty Street, Schenectady; H. D. Larrabee is also with this company. With the Western Electric Company, 57 Bethune Street, New York City, are: G. R. Blodgett, F. W. McIntyre, G. E. Mather, W. H. Matthies, and Robert White, Jr. The last two live at 463 West Street, New York City. The following — H. H. Davis, J. C. Howe, W. L. Vatter, and H. S. B. Stimson — are with the American Telephone and Telegraph Company at 125 Milk Street, Boston.— Francis Bradley and R. L. Frost are with the Midvale Steel Company, Nicetown, Pa. They live at 4847 Pulaski Avenue, Germantown, Pa.— M. Goldenberg and C. H. Boardman, Jr., are draughtsmen at the Carnegie Steel Company, Pittsburg, Pa.— With the Fore River Ship and Engine Company, Quincy, Mass., are H. A. Everett and W. O. Teague. The latter's address is 5 Claverley Court, Quincy, Mass.— G. M. Spear is with William Cramp & Co., Philadelphia, in the engine draughting-room. His address is 1538 Green Street, Philadelphia, Pa.— R. V. Brown and A. E. Nash are in the boiler-room at Cinclaire Central Factory, Cinclaire, La.— H. N. Hunt is draughtsman for the American Locomotive Company.

His address is 184 Friendship Street, Providence, R.I.— H. O. Trowbridge is draughtsman for the Bath Iron Works, corner Union and Water Streets, Bath, Me.— The following are connected with the American Bridge Company: Conrad Wendel, who is in the erecting department, and lives at 201 East Hemlock Street, Hazelton, Pa.; and H. B. Pond, who is a draughtsman at East Berlin, Conn.— Teachers in other institutions than the M. I. T. include: C. M. Allen, who is professor of physical and mechanical engineering at St. Francis Xavier's College, Antigonish, N.S.; Miss Cora S. Hopwood, 205 Austin Street, Worcester, Mass., who is assistant in physics at the Worcester South High School; G. E. Marsh, who is teaching physics at Adrian College, Adrian, Mich.; Miss E. P. Rathbun, who is assistant in zoölogy at Wellesley College, address 424 Massachusetts Avenue, Boston; and E. E. Nelson, who is instructor in electrical engineering at the Lowell Textile School, Lowell, Mass.— On the Massachusetts State Board of Health are: A. R. G. Booth, assistant chemist, Room 502 State House, Boston; and R. M. Whittet, assistant in the Engineering Department, at Room 140, State House, Boston.— J. W. Ballard is with the Griswoldville Manufacturing Company, Griswoldville, Mass.— W. M. Bassett is with the Empire Bridge Company, address 360 West Church Street, Elmira, N.Y.— D. M. Belcher is a graduate student at the Institute, address 263 Newbury Street, Boston.— N. E. Borden is assistant engineer at the Pacific Mills, Lawrence, Mass.— H. O. Bosworth is with the Denver Fire Clay Company, address 1742 Champa Street, Denver, Col.— George Bright, Jr., is in the Coke Works of the Dominion Iron and Steel Company, Sydney, Cape Breton, N.S.— C. H. Burr is with the Standard Steel Works at Burnham, Pa.— L. S. Cates is in the firm Ortiz y Cia, Parral, Chihuahua, Mexico, silver mining.— W. H. Comins is with the Descubridora Mining and Smelting Company, Descubridora, Durango, Mexico.— J. C. Fruits's address is 136 South 13th Street, La Crosse, Wis.— F. Gannett is a levelman, Board of Public Works, Harrisburg, Pa.— E. Gorfinkle lives at 164 Walnut Street, Chelsea, Mass.— A. P. Hall's home address is 3 Cordis Street, Charlestown, Mass. He is at present studying

at Berlin, Germany.— A. M. Hamblet is a chemist with the Bowker Fertilizer Company, Elizabethport, N.J.— A. E. Hansen is assistant to A. D. Fuller, consulting and contracting engineer, 3 Hamilton Place, Boston.— F. B. Hull is a student with the Westinghouse Company, Pittsburg. His address is 602 Mulberry Street, Wilkesbarre, Pa.— E. H. Cutter is an apprentice in the Allis-Chalmers Company's shops. His address is 6516 Harvard Avenue, Chicago, Ill.— J. J. Eames is in charge of the testing department of the Crest Manufacturing Company, Cambridge, Mass.— E. O. Eastwood is in the Scientific Branch of the Bureau of Construction and Repair, Navy Department, Washington, D.C. —W. H. Farmer is assistant to the roadmaster, Concord Division, B. & M. R.R., address care of F. J. Tucker, Concord, N.H.— F. J. Field is with O. E. Parks, C.E., Westfield, Mass.—J. M. FitzGerald is in the department of motive power and rolling stock, B. & A. R.R., 366 Terminal Station, Boston.— D. R. Franklin is a chemist with S. M. Bixby & Co., shoeblacking manufacturers, 194 Hester Street, New York, N.Y.— LeR. E. Kern is a draughtsman with Alexander Blair, architect, 673 Cherry Street, Macon, Ga.— H. G. Koch is with H. C. Koch & Co., architects, 1040 Wells Building, Milwaukee, Wis.— B. E. McKechnie is a mining engineer at Ashcroft, Col.— J. J. Mahar is a H. & V. draughtsman for the Boston School-house Commission. He lives at 120 Boylston Street.— J. R. Mardick is a chemist for Pfister & Vogel Leather Company, 3226 Chestnut Street, Philadelphia, Pa.— J. R. Marvin is with the B. F. Sturtevant Company, Jamaica Plain. His address is 88 Perry Street, Brookline, Mass.— H. S. May is in the motive power department, U. P. R.R., address 1910 Capital Avenue, Omaha, Neb.— F. K. Mitchell is an inspector for the N.E. Bureau of United Inspection, 71 Kilby Street, Boston.— P. W. Morrill is in the testing department, Edison Electric Illuminating Company, 516 Atlantic Avenue, Boston.— J. R. Morse is axeman, B. & A. R.R., Room 327, Terminal Station, Boston.— E. L. Upham is with Brown & Adams, wool commission merchants, 274 Summer Street, Boston.— L. E. Vaughan is with Charles A. Vaughan, building con-

tractor, 28 William Street, Worcester, Mass.— Elisha Walker is a banker, 35 Cedar Street, New York, N.Y.— A. R. Nichols is a draughtsman with William A. Bates, architect, 100 Broadway, New York City, address 1008 Bloomfield Street, Hoboken.— G. P. O'Connell is assistant engineer with Ellsworth & Kilpatrick, Holyoke, Mass., address Miller's Falls Inn, Miller's Falls, Mass. — P. C. Pearson is assistant foreman in lead refining department, American Smelting and Refining Company, address 55 Rector Street, Amboy, N.J.— P. B. Pendill is an electrical engineer with the Manhattan Railways, address 98th Street and Third Avenue, New York, N.Y.— B. G. Philbrick is in the milk laboratory of H. P. Hood & Sons, 394 Rutherford Avenue, Charlestown, Mass. — E. P. Pitts is with Holbrook, Cabot & Rollins, general contractors, Boston, address West Falmouth, Me.— E. T. Pollard is with I. R. Patch Manufacturing Company, 24 Cottage Street, Rutland, Vt.— J. H. Redfield is a member of the firm Mifflin & Redfield, civil engineers and contractors, Wayne Estate Building, Wayne, Pa.— F. T. Root is in the employ of J. N. Emoers' Sons department store, address 249 Lincoln Avenue, Youngstown, Ohio. — A. H. Sawyer is an assayer in Hancock, Mich.— G. T. Seabury is assistant engineer with the Rapid Transit Subway Construction Company, address 1913 Amsterdam Avenue, New York City.— C. H. Wells is assistant in the engineer's office, testing station, Spring Garden Water-works, Philadelphia, Pa.— L. B. Wilder is superintendent Uintah Copper Summit Company, Vernal, Utah.— W. H. Williston is with the Hancock Inspirator Company, Watson Street, Boston.— C. A. Smith is with the Fernando Mining Company, San Fernando, Estado Durango (via Nogales, Culiacan, Estado de Sinaloa), Mexico.— J. W. Smith is in the engineering department, B. & M. R.R., address Oakland Street, Lexington, Mass.— N. Sprague, Jr., is a mechanical inspector, Consolidated Car Heating Company, 413 North Pearl Street, Albany, N.Y.— H. W. Stebbins is in the testing department, S. P. R.R., Sacramento, Cal.— C. C. Stover is a draughtsman with the American Soda Fountain Company, 282 Congress Street, Boston.— E. W. Sturtevant is with the Hansell & Elcock Foundry

Company, Archer Avenue and 23d Place, Chicago, Ill.— W. C. Taylor is assistant engineer with the C. C. C. & St. L. at Springfield, Ohio.— O. C. Thanish is with the Ingersoll-Sergeant Drill Company, 26 Cortlandt Street, New York City.— E. G. Thatcher is chemist with the Fremont Nail Company, West Wareham, Mass., address Middleboro, Mass.— Mr. J. R. Scott, of Manchester, England, has become business manager of the *Manchester Guardian*.

NECROLOGY

ALBERT MAYNARD KNIGHT.

Albert Maynard Knight, for thirteen years the faithful and devoted bursar of the Masaschusetts Institute of Technology, died at his home in Waltham, Dec. 28, 1902. He was the son of Manasseh and Nancy Huntstable Knight, and was born in Boston, Sept. 8, 1838. His father for more than fifty years kept a store at the corner of Cornhill and Washington Street in Boston, and was held in very high esteem by all his business associates. The son was educated in the Boston schools. While there, through the act of a companion he received what proved to be a permanent injury to his spine. With genuine magnanimity he declined ever to disclose his companion's name. Early in his life he was told by a physician that he had a tendency to consumption; and, acting in this as in all matters throughout life with absolute conscientiousness, he decided that he must never marry, and went with his brother, Francis Parkman Knight, about the year 1863 to China. His brother had been a merchant in the north of China, and held the position of United States consul. Socially, he was a very popular man, and through him Albert was brought in contact with people from all parts of the world. His health improved; and he developed a taste for Chinese art, and made a very valuable although limited collection of artistic objects. He also devoted considerable time to the study of the Chinese language, becoming sufficiently proficient to read, write, and speak the Manchurian dialect. After five or six years in China he returned to the United States, staying for a time in San Francisco, and then going later to Spain and the Azores. Subsequently he again visited Spain, spending there and in southern Europe the larger part of a year, and returning to the United States through France and England. On one of his voyages he had a severe fall, which aggravated the existing spinal trouble, so that, in addition to having naturally a some-

what delicate constitution, he suffered at times during the remainder of his life acutely. Later he was for a time employed in one of the government departments in Washington, and subsequently accepted the position of bursar at the Institute, which office he continued to hold until he resigned on account of ill-health three months before his death. Even after his resignation he continued to do some special work for the Institute, with whose interests and success he had identified himself with absolute loyalty. At one period of his career, when his work as bursar was less exacting than it became later, he did some outside work in settling a rather complicated estate. Similar opportunities were offered him later; but he felt that they would interfere with his duty to the Institute, and he accordingly declined them.

The work of a bursar, involving as it does in part the collecting of bills, is not one likely to win popularity; but it is pleasant to learn from letters sent to Mr. Knight by students and their parents that he often found opportunity so to deal with the students that he won their sincere gratitude for his considerate treatment and wise and kindly advice. Indeed, since his death, facts have come to light showing that, in a number of instances, from his own limited means he helped deserving students to get an education. To these matters he made no allusion at all during his life, and even his intimate friends knew nothing of these acts of generosity.

His life in his home with his sister was a very beautiful one. If in the discharge of his official duties he sometimes seemed exacting or strict, no such trait was seen by any one fortunate enough to be welcomed as his guest. He was at once the gracious and courteous host, and the fund of information gained by him in his travels and the many varied experiences of his life made him most entertaining.

His religious views were those of the Swedenborgian or New Jerusalem Church, with which he became connected in the year 1861. How largely his whole life was affected by his religious principles was evident to those who knew him well. During the last part of his life he suffered from most trying and depressing forms of illness. He knew that his life was near its close; but his

mind was alert, and he gave to his work, even when ill, his constant and conscientious thought. His courage did not give way, even in the presence of a fatal malady; and only a few days before his death he was planning how he would use the time if death were delayed. His life had been one of absolute fidelity to the trusts committed to him. He had been wont to do his duty despite physical ailments, and he faced death with a composure born of courage and of faith. To him death was not a terrible thing. He truly felt "a soul may close the last page o'er, and say unto God and itself, 'Life is begun.'" G. W.

BOOK REVIEWS

A CRITICAL HISTORY OF OPERA. ORCHESTRAL INSTRUMENTS AND THEIR USE

By Arthur Elson (M. I. T. '97). Boston: L. C. Page & Co.

These two books belong to the class of those that are written about musical subjects for the general reader rather than for the advanced student; and, while they should not be taken too seriously, they will find a ready welcome at the hands of people who, not being musicians, wish to know something more about operas and orchestras than can be found out from programme books and "books of the opera."

"A Critical History of Opera" is somewhat overweighted, perhaps, by its title, as it is rather a convenient handbook of operas and opera writers. After a chapter on the origin of the opera, which is traced from the Greek chorus, each school of composers is discussed; and mention is made of all of the important and many of the unimportant members of the school. The list of operas referred to is a long one, over three hundred finding a place in the index; and in a surprisingly large number of cases the plot is hastily sketched, and an idea is given of the character and the value of the music. For the intelligent but untrained lovers of music, such as abound in our audiences, the book will be of much value.

"Orchestral Instruments and their Use" is a book even more readable in quality than the one mentioned above. It makes comparatively slight drafts on one's knowledge of technical terms and presents its facts in an attractive manner. The different chapters treat of primitive and savage instruments, the violin and other bowed instruments, the different families of wood, wind and brass, and the other instruments in use in the modern orchestra. In each chapter the history and the technique of the instrument are briefly sketched, and its tone-color and general effect are discussed, while many examples both of ordinary and of exceptional use by different composers lend interest to the discussion. S. F. T.